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For list of Officers of the Society for 1922-1923, see page xii of the Adv. Section. For Officers of the District Medical Societies, see page xii.

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THE PROGRESS OF THE MOUTH HYGIENE MOVEMENT.*

BY WILLIAM R. WOODBURY, M.D., ROCHESTER, N. Y.

WITHIN the past decade and a half a new interest has come into the practice of dentistry. During these years a notable advance has been made. The service of dentistry to the community—or, better, the service of medicine, for both the dentist and the physician are medical men—has risen to a higher level and to sounder ideals. These years have been the first fifteen years of the Mouth Hygiene Movement. There has been started a movement which is bringing into closer coöperation all the medical agencies which work to meet, in the fullest way, the needs of community service, medical practice and medical teaching. In all three of these fields of health-promoting endeavor this period has been of a distinctly constructive character.

All that can be done in this short address is to review briefly the progress which has marked this constructive period,—to review its accomplishments in fact and its educational perspective; and to emphasize the need for unremitting endeavors broad enough to insure the coöperation of all the formal agencies of education. Progress in the coming years rests with the generous coöperation of the medical profession and the community. The present time is opportune for a look forward toward the development of this new interest; and to encourage the growing emphasis which is being given to these advanced factors which have become incorporated into the daily work the dentist is now doing. In the future, as in the past, the burden of effort towards advancement falls upon education. The way to advance lies in the coöperation of the dentist with the physician, and both together working with the community.

Most illuminating have been the experiences in the short period through which this new movement has passed. An unexpected prevalence of neglected and crippled mouths was discovered. These startling and unwelcome facts have been brought to public notice. Common knowledge is it now that there is enormous need of adequate and easily accessible opportunities for dental service which will forestall sickness and disease. There is universal acknowledgment that a large proportion of the individual members of every community,—urban and rural,—stand in urgent need of having more and better care given to their teeth and mouth, both by themselves and by our profession. Most physicians had the habit of ignoring mouth conditions. Their patients might carry decayed and abscessed teeth; some or all of their teeth might be hopelessly diseased or lost. Be the mouth condition good or

* Read before the Massachusetts Dental Society Oct. 2, 1922.

bad, it counted as naught; it was not seen, nor was it given any thought, attention or consideration in the treatment of disease. Reputable physicians and surgeons kept their minds closed to the claims of mouth hygiene. These claims they denied vigorously; their answer was that there was no basis, scientifically or in facts, for such "extravagant" claims. Hospitals neglected the teeth of their patients. Dental diagnosis or dental treatment in general hospitals was practically unknown. If, in order to execute a nicety of technique in certain operations in or about the mouth, perfectly sound and healthy teeth were in the surgeon's way, straightway without further thought these necessary organs of nutrition were ruthlessly pulled out and thrown away. Hospital staffs did not include dentists. The rare dispensary or out-patient medical service which had a dentist on its working staff called upon him only to pull teeth. Never was he expected or asked to save teeth. In the organized fight against tuberculosis the campaign slogan was, "Fresh air, good food and plenty of it." Never a thought was there as to whether or not the pre-tubercular or the tuberculous individual could chew his food properly,—whether he could get his nourishment and fighting strength from the food which was forced into him. Teeth cavities —store-houses of infection—were not reckoned with.

Dental care as generally accepted and practiced was little more than quick relief from pain, and elaborate and expensive repair work. The dentist was regarded as a skilled and highly-specialized mechanician. In the popular mind he pulled teeth. There was just beginning to come a growing recognition that dentistry is a branch of medicine; that dental trouble and systemic disease are related one to the other, and that, often, the connection and inter-relationship between body and mouth conditions are close and vital. Toothache drove the individual to the dentist; and a terrible, shrinking fear of the painful experiences which he was sure to encounter in the dentist's chair postponed, not infrequently, the greatly needed repair work. Dental and medical faculties belonging to the same academic family, and members of the same corporate body, functioned separate and apart.

Public school medical inspection did not include an examination of the teeth; carious teeth and mal-occlusion, the most frequent physical defects of children, were overlooked. There was no community dental service. Children belonging to families whose budgets permitted it were sometimes dragged, trembling and sobbing from pain and fear, to see the dentist. Sometimes, they would not be dragged; they did not go. Children whose parents did not have the money never saw a dentist. Malnutrition and the ever-lurking infectious diseases were finding countless and easy victims in the mass of dentally-neglected children.

These, in brief, were some of the out-standing facts which obtained. In the interval under review the achievement in facts has been noteworthy. Not a single one of the claims made for mouth hygiene was extravagant or exaggerated. Facts did warrant them,—every one of them. Hard facts which could not be gainsaid have carried conviction into action. Gradually a new conception of dental care has been accepted, and the preventive idea in dentistry has been advanced into full recognition. In fact, a new public health work has been established. A transformation in the point of view as to the need of adequate and easily available community dental service has been brought about, and the best way to meet public dental needs of city and rural communities is now being determined. The vital necessity of mouth hygiene to safeguard against individual and community infection, and to raise the general health level is no longer questioned. Through the discovery of the relation between mouth conditions and systemic disease the dentist and the physician have been brought much closer together. The interest of the physician in dentistry has been greatly stimulated. On the other hand, the dentist's interest in medicine has been enhanced through his growing realization of the significance of mal-nutrition both as cause and effect in dental disease. Not infrequently, disease is stubborn, and refuses to yield. When the physician and the dentist work together better results eventuate. Dentistry is a branch of medicine.

Medical school inspection now includes a searching examination of the teeth. Public school dental clinics are in operation. These clinics are in charge of dentists who supervise and do the prophylactic work for the school-children. Instruction in mouth hygiene through tooth-brush drills is a part of the school-child's health training. In some public schools dental hygienists are employed. General hospitals now give heed to the dental needs of their patients. The house and out-patient staffs of these institutions include dentists in their working personnel. These specialists save teeth. Dental and medical faculties of the same corporate body have united; they coöperate in unity; they are no longer members of a house divided unto itself. Through closer coöperation and friendly contact, each with the other, these academic bodies are creating higher standards for the practice of medicine. Higher requirements bring better medical service to the community. Health needs of all members of the community are being served more satisfactorily.

In a number of the larger cities there is community dental service. Public dental service has been inaugurated in some rural districts Programs for public dental facilities are being

worked out in a growing number of community centers. The fundamental principles of a community dental program are being shaped into organization, they are maturing into a definite and practically working dental policy. Generously endowed dental foundations have been established in two cities—Boston, and Rochester, New York. The Forsyth Dental Infirmary, in Boston, was founded in 1910, and opened in 1915; the Rochester Dental Dispensary was founded in 1915. In the establishment of both of these new public health institutions the generous founders were moved to their benefactions through the recognition, upon their part, that the prevention of disease is of greater importance than its treatment after it has taken hold; that the ultimate object sought is the development of methods and practices to prove the value of preventive dentistry.

Three training schools for dental hygienists have been established,—at the Forsyth Dental Infirmary, at the Rochester Dental Dispensary, and at Columbia University, in New York City. All three of these schools were opened in the same year, 1916. In 1913, in Bridgeport, Connecticut, the first training course for dental hygienists was inaugurated. Its purpose was to fit a staff of dental hygienists to work in the public schools of that city; it was conducted under the auspices of the Board of Health. At the present time there are, approximately, 500 graduates from these four training schools. Training courses for dental hygienists are under consideration at Northwestern University, Chicago; the University of Michigan; the University of Minnesota; the University of Pennsylvania; the University of California; and Colorado University.

Legislation providing for licensing of dental hygienists has been written into the statutes of twelve states,—Alabama, Colorado, Connecticut, Iowa, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, New York, Oklahoma and Tennessee. Similar legislation is now being sought in California, Illinois, Ohio, Pennsylvania, and other states. New York first licensed dental hygienists in 1916. In 1917 Massachusetts licensed them to be employed under the direction of registered dentists. New Hampshire permits dental hygienists to be employed only in schools and institutions. Oklahoma and Tennessee license them only for employment in dentists' offices.

In a dental survey made in 1921, and covering the whole United States, an inquiry was put to the Boards of Health and School Departments of all the larger cities, and a few of the smaller ones, as to the community dental service in their respective cities. Forty-three of the forty-six cities questioned replied. Thirty of the forty-three cities had dental clinics for their school-children. In eighteen cities these clinics were conducted by the School Department; in twelve they were operated under the supervision of the Health Department. All but nine of the thirty had one or more dental clinics operated in school buildings. Dental hygienists are employed in the public schools of five cities,—Bridgeport, Hartford, New York Rochester and Waterbury. Likewise, the fact that mouth hygiene work is being done in industrial plants is mention-worthy. In 1919 the State Department of Public Health of Massachusetts created a Division of Mouth Hygiene, and inaugurated a comprehensive program. Public dental clinics are in operation in 120 of the cities and towns of the state. This fine piece of public health work is a credit to the energetic and unselfish efforts of the Massachusetts Dental Hygiene Council. Dental clinics have been organized by the New England Division of the American Red Cross; twenty-nine of these clinics have been established. The Federal Government includes dental clinics, in the larger cities, as a part of the rehabilitation program for veterans of the World War.

From the educational perspective the first decade, broadly speaking, of the mouth hygiene movement is highly interesting. Whenever there is real need for a thing it is bound to grow. Immediately the campaign of education in mouth hygiene began there came forth to meet it an active and absorbing interest, and from all quarters. The obvious facts which were set forth as reasons for practicing mouth hygiene, and the care taken not to overstate its claims or make them extravagant, brought to the movement the endorsement of all the formal agencies and organizations which work to safeguard individual and public health and raise them to a higher level. All these organizations allied themselves as co-sponsors with the Dental Hygiene Council, and took up the cry; they helped spread the slogan. Thinking opinion began to believe in this new health work. Straightway, public opinion began to shape itself into an upgrowing appreciation of what a clean, whole mouth with its full complement of healthy teeth meant. The substantial aid and coöperation which came, and freely, and gave itself with generous good-will to the dental profession of Boston, through the Dental Hygiene Council, marked the beginning of a health crusade which within its first decade, broadly measured, has established itself firmly; and it has developed into a new country-wide public health work. Steadfastly, this movement has grown, and with a vigor which has carried it far and wide. Dr. Osler framed a truism when he said, "There is not any one single thing more important to the public in the whole range of hygiene than the hygiene of the mouth." The educational work which the Dental Hygiene Council of Massachusetts inaugurated and organized has translated this truism into a new public health work. Educa-

tion includes giving to the child the foundation of sound, stable physical and mental health: helping him strengthen his knowledge of health-keeping; and aiding him to build for himself a strong physical house which can withstand use and wear. A "small work with large contents" was the description once given of one of the earlier educational mouth hygiene publications. This description aptly fits the progressive educational work which has been done in mouth hygiene, and to which stands credited the list of achievements just now reviewed. These results mark an advance in the prevention of disease, and medical progress.

No longer is it necessary to point, either by statistics or figures, the need for mouth hygiene. Those facts have been broadcasted widely. Dental needs are understood; they are recognized. Public opinion is formed as to the necessity of prompt and constant care of the mouth and teeth. Directing its practice on the part of the individual and by the community are the lines along which work must now be done. The way to meet the dental needs of the community is the large problem which has developed. Naturally, the prophylactic dental care of school children claims first attention. Prevention of disease is the first and the leading line of endeavor of all public health work. Dentists have their allotted work to carry through in this undertaking. They discharge only a part of their duty in pointing out the community needs. With the growth of the preventive idea in dentistry more and more effort must be made to reach children of the younger ages. This effort is being made very generally. There is one immediate and remote benefit which comes to children who have early prophylactic dental care,—a benefit which has not had the recognition it merits. Relief from fear is a widely-useful and substantial benefit. The child who has early dental care is safeguarded against becoming, too soon, the premature victim of mental, emotional and physical disorder,—Fear. Not infrequently, toothache and, following it, the pain the child suffers at his first experience in the dentist's chair give him his first, first-hand knowledge of real pain and real fear. Fear is dis-ease; it is a dreadful burden to carry throughout life. There is no one single factor which warps and distorts the life of the individual, which so unbalances the nervous system, and which, so easily, draws a reaction of impatience from those to whom this imbalance is exhibited, as ungovernable, shrinking fear. By no means the least factor in the prevention of disease is an early beginning in the endeavor to secure a balanced functioning of the nervous system.

Children and adults present different problems in dentistry because of differences in the kind of dental work required. With children the emphasis is upon prevention,—upon cleanliness, the formation of the mouth hygiene habit, and nutrition. The child must be taught to keep his teeth clean. Parents do not always establish the habit. The problem is, How can every child be taught the mouth hygiene habit? With the dentist and the dental hygienist is the source of the instruction and inspiration which makes this habit. At the present time, in the United States taken as a whole, the ratio of registered dentists to the gross population is one dentist to 2,400 persons. The Commonwealth of Virginia has one dentist to every 4,126 of its population, which is the greatest misproportion. California has the smallest ratio, one dentist to every 1,296 of its population. Massachusetts comes second in the list of states, with a ratio of one dentist for every 1,346 persons; and Metropolitan Boston, with a population roundly taken as 1,500,000, has an approximate dentist ratio of one to 800. New York and Chicago have each about the same dentist-population ratio, one to every 1,200 persons. In the larger cities dentistry has become specialized. In the United States approximately 375 dentists are orthodontists exclusively. The total number of dentists in the whole country is about 45,000. There is a serious scarcity of dentists at the present time. It is difficult for dental schools to keep their infirmary staffs up to full strength. Briefly, the dental profession cannot undertake to meet the demands of community dental service. Dental hygienists are not available in sufficient numbers to meet community service demands. There is reason for the apprehension that dental hygienists will be absorbed into the offices of the registered dentists. Thus far this absorption has eventuated with the majority of these young women immediately upon their graduation. The law which is now being urged in Illinois to license dental hygienists provides for their practicing in public schools and in public institutions, but, purposely, does not permit them to be employed in dentists' offices. The reason for this discrimination is to conserve the available supply of dental hygienists for public health work. In the academic year just beginning 85 young women have enrolled in the School for Dental Hygienists of the Rochester Dental Dispensary,—a record number, and the largest class ever entered in any dental hygienists' school in the country. Seventy-five applicants were refused because the lack of facilities to train them properly made it impossible to enroll them in this year's class. At the time the dispensary was organized a hygienists' school was not contemplated, and no provision was made in the building to accommodate the school. In other years the facilities of the dispensary have been taxed to the utmost; and the large enrolment this year makes it increasingly difficult to carry on the hygienists' school and the regular activities of

the dispensary. Soon after the first contract was made with the City of Rochester to do the cleaning of the school-children's teeth, it became apparent that it would be impossible to obtain the services of graduate dentists to do the work. Hence, it became necessary to organize a school for the training of young women in this branch of dentistry.

These facts as to the dentist and the dental hygienist speak for themselves. They are the most serious perplexities which have developed; they have not yet been solved. A demand for community dental service has been created, and the sources of supply are totally inadequate. The program has been executed only in part; the preventive idea of dentistry has been proclaimed and received universal public acceptance. Full measure of the service demanded has not been provided. Qualified dental hygienists—young women carefully selected and thoroughly trained—can do the preventive work for school-children. Women have been found to be well fitted for this work. But their work must be supervised closely by registered dentists. Supervision is not required because of any personal shortcomings, as a rule, but because of the necessarily limited technical training and experience of these young women. Knowing the beginning of disease is the most difficult factor in the practice of medicine. Its detection calls for the highest skill and broadest experience.

Another perplexity has developed: there is the problem of dental service for adults. Their needs are largely curative, repairing or replacing diseased teeth; and relieving pain and the removal of infections that cause systemic disease. Likewise, mouth hygiene has value for adults; its benefits have been demonstrated effectively. This problem has, in common with that of school-children, the same serious perplexity: no one stands ready to do the public health dental work demanded. Dental hygienists are neither qualified nor licensed to undertake reparative work. In the larger cities, and in many small industrial communities, the dental "parlor" flourishes. These dental irregulars advertise generously the most profitable forms of dental work; they are thoroughly commercial. They work untold evil upon the mouths, health, ignorance, and the pocketbooks of thousands of adults. Preventive work is not profitable enough in money-gain for the dental quack either to advertise it or give it his attention. The dental quack and dental "parlors" are active evils. Providing adequate public dental facilities with high standards for adults is the only way to combat and control these parasitic institutions.

Industrial plants are providing dental clinics for their employees. Approximately 72 of these clinics are in operation. In some of them the expense is borne entirely by the firm; in some, the employees pay for the cost of materials. Some firms require the employee to have his mouth put in order, and offer him the service of the plant clinic. At the present time there is little danger that the development of industrial dental clinics will interfere with the progress of community dental service. Both are needed. It would be unfortunate if industry went so far as to relieve the community of any part of its duty of providing the necessary dental facilities which might be used for both adults and children. Nor should the business man come to feel that, because he is giving both financial and moral support to dental clinics in his own establishment, he should not contribute and coöperate in the support of community dental service. The relatively small undertaking which industry has entered upon against the dental "parlor" merits commendation, and professional coöperation. Industry is one more formal agency and organization which has allied itself as co-sponsor with the medical profession,—the dentist and the physician, in the work of health education. The two large institutions which have been founded and generously endowed as centers of community dental service, the two outstanding educational achievements in mouth hygiene, the Forsyth Dental Infirmary, in Boston, and the Rochester Dental Dispensary, of Rochester, New York, are the benefactions of industrial pioneers.

Stated briefly, the principles of a community dental service are:

1. Dental care is essential for the upkeep of health and working efficiency.
2. The community dental needs in general are far beyond the reach of present or prospective facilities; in plant and equipment, and in dental personnel both in clinic and private practice, the dental program cannot be carried through.
3. Preventive dentistry is the only measure which offers hope for the future.
4. The primary application of preventive dentistry must be with children. A dental program for children is part of the general child health problem.
5. One hundred per cent. of the children should be reached; the aim should be parallel to that of school education.
6. If selection must be made because of limited facilities, children of the younger years should have the first call.
7. General prophylaxis and hygienic instruction come for first attention. Hygienic instruction includes both mouth hygiene and general hygiene. Curative work comes second.
8. Orthodontic work is relatively expensive. Dental personnel for this work is very limited. Only in the larger dental institutions in large communities is it practicable.
9. A 100 per cent. dental program for adults is impossible.

10. Preventive dentistry cannot be expected to develop as an adjunct of private practice except for the small part of the community which has ample means. Preventive dentistry must be dealt with through public and semi-public facilities, in local or school clinics and dental institutions. The same facts hold for curative dental work for a large part, both children and adults, of the community members.

11. Dental service in clinics should be salaried.

12. Opposition on the part of private dental practitioners to the development of a preventive and reparative dental community service, public or semi-public, is unwarrantable. There is more dental work needed to be done than all the present and prospective dentists can possibly undertake.

13. Reasonable financial policies for the maintenance of organized community dental service are:

(a) "Prophylactic work for children be free and open to all children of school or pre-school ages on the same terms as is public education.

(b) "With respect to the cost of this service, it should be borne in mind that the estimated cost of tooth-cleaning and of instruction on a large scale in mouth hygiene to children is less than five per cent. of the usual per capita cost of school education, and is a measure which will make more efficient the other 95 per cent. expended.

(c) "For dental care other than prophylaxis, a charge should be made in the clinic, including an admission fee and in addition charges for materials used for fillings, anaesthesia, and other purposes; these fees being remitted when necessary.

(d) "For adults, clinics should charge fees covering the cost of service, but these should be remitted to persons seriously in need of the service and unable to pay for it.

(e) "For children it is often essential to establish fees lower than the cost rates, in order that the service may be sought by many of those who need it."

14. Preventive and curative dentistry in dental institutions and in local clinics can be promoted and should be advanced through the present endeavors for closer affiliation of dentistry with medicine. More attention to preventive dentistry in training the dental student, and largely increased facilities for the training of technical assistants to the dentist are required.

These, in substance, are the conclusions drawn and newly set forth (in 1922) in an intensive survey of community dental service made by the Service Bureau on Dispensaries and Community Relations of Hospitals, American Hospital Association.*

Thoughtful opinion concurs in these conclusions, both in their substance and in the spirit with which they are put forward. They point to the lines of endeavor which will hold the mouth hygiene movement on its progressive advancement forward. Temporarily, its natural progress is halted.

Dental service and dental practice begin with medical teaching. Advancement in the future, as in the past, depends upon education. Herein lies the line of immediate endeavor. The progress of the mouth hygiene movement depends upon full knowledge and recognition of the shortcomings of the dental situation. First, as to the medical schools and the curriculum for the dental student: a survey of all the dental schools has been made for the Carnegie Foundation for the Advancement of Teaching. Doubtless the forthcoming report will point the way, and inspire the undertaking to reconstruct the medical curriculum so as to train the dentist and the physician to work together; to strengthen the emphasis upon the prevention of disease; and to require every dental school to be closely associated with an incorporated university, and to be included with the medical faculty. Of the 52 dental schools only 17, at the present time, have academic relations. For the first two years the dental student's training should be identical with that of the physician. The dental student should be required, as is the medical student, to serve as a hospital interne upon completing his academic training.

These seemingly drastic measures are not without precedent: the Carnegie Foundation has accomplished equally severe changes in medical teaching. An advancement of professional dental education is needed. Mouth hygiene is public health work. Popular judgment has been formed on the basis of abundant and reiterated evidence of its need. Public opinion on that subject has been fixed, and it will remain fixed. Dentists with unquestionable qualifications to work with physicians and surgeons, and ready to do public health work are in demand; the present supply is totally inadequate. More training schools for the new kind of dentist will, inevitably, be organized. Now is the one right time to standardize the dental school and dental teaching, as has been done with the strictly medical school and its curriculum.

A hospital interneship after graduation for the dental student would relieve, somewhat, the demand for operators in the foundations for community dental service, and in hospitals. The fulfilment of the community needs for both children and adults would be hastened. One of the many ways in which the growing recognition

* Community Dental Service, Dental Needs and Dental Facilities: With Special Reference to a Dental Program for Chicago. Michael M. Davis, Jr. Chicago. 1922.

of the connection between dentistry and medicine has been manifested is the increase in dental service in general hospitals and dispensaries. Dental service is either definitely established or well under way in more than one-third of the 282 larger general hospitals in the United States. In 46 of these hospitals dental service is recognized as of departmental rank, with assigned beds in some instances, and with beds as needed in others. Dental service is an essential part of the work of general hospitals, for complete diagnosis and full treatment of many patients. Already, two large community dental foundations exist. Certain is it that more institutions for this new type of public health work will be created.

Preventive dental work for public school-children should not be turned over exclusively to the dental hygienist. There is danger of the over-development of the work of these young women. The school dental program is a part only of the general health program for children; the work which the school nurses and other medical and health workers are employed to do should be considered, and the combined work of all should be evenly balanced. Otherwise, administrative difficulties are likely to develop. Besides, at the present time there is a large dearth of trained and licensed dental hygienists. This dearth is not likely to be any smaller in the near future.

At the present time there is a pause in the fulfilment of the mouth hygiene service in the two leading pioneer cities,—Boston and Rochester. Boston is noteworthy for its community dental service, both for the number and variety of its dental facilities. Its two Dental Schools, Harvard and Tufts, have 220 infirmary chairs. In addition, there are 19 chairs distributed through six or more other dental centres. There are no school dental clinics. Community interest in mouth hygiene in Boston is relatively large. Consequently, great pressure for service has centered upon all the dental facilities. The majority of school-children are taken by the school nurses to the Forsyth Dental Infirmary. In 1921 the Infirmary limited its admissions during the school year to Boston school-children of the first three grades. Boston is not yet ready to provide medical treatment in schools. Control of the school medical inspection is with the School Committee, and not with the Department of Health. There is no inspection of the teeth in the public schools by dentists. Community dental work in Boston is of a high grade; no criticism as to that part of its dental organization can be made. Transportation is the fundamental weakness in the Boston plan. In a number of vital ways this difficulty works a waste of time, effort, efficiency and money; there is danger of a considerable reaction in the public health interest of the community. This difficulty in securing dental service lays an over-heavy tax upon the good-will and the purse of many of those who need instruction and treatment. A one-hundred per cent. job can not be done with the present centralization of the prophylactic work.

The Rochester plan is the most comprehensive one for children which has developed thus far. The Rochester Dental Dispensary centres its community dental system. With that in view was its location selected. It is closely linked with the community. Not to any large extent are prophylactic cleanings done at the Rochester Dispensary. Practically all the preventive work is done in the public school buildings by dental hygienists supervised by dentists of the dispensary staff. Reparative work of all kinds for children whose parents can not pay for private service is done at the Dental Dispensary. An admission fee of five cents is charged, but not always collected; and only those children are admitted whose family income is below definitely determined pay envelopes. This whole plan keeps down the unit cost in the Rochester Dispensary; holds the average preventive work at a low figure (the average cleaning cost is forty cents); and fulfils the community dental needs for children. The prophylactic service reaches practically the whole child population in the schools, whereas the transportation problem is limited to the children needing reparative treatment,—only a relatively small number. Extension of the dental service of the Rochester Dispensary has been made to include the entire county,—Monroe County of New York State, of which Rochester is a part. In 1921 the Rochester Dispensary included in its budget, and announced definite plans to open a dental clinic for adults. The execution of this plan pauses on account of the lack of graduate dentists.

These two leading plans for community dental hygiene service have been outlined, briefly, in order to emphasize two of the outstanding perplexities in the progress of mouth hygiene,—transportation and lack of graduate dentists. Other cities, than the two just mentioned, have made real contributions to the growth of the mouth hygiene movement,—notably Bridgeport, Connecticut. This pioneer city, of a smaller size, is widely and worthily known and credited for its development of the preventive idea in dentistry. The whole is greater than the sum of all its parts. Reviewing the whole mouth hygiene movement, its beginning, its growth and its results; bringing together from every quarter and assembling its promises and its achievements for inspection, there is a satisfaction in the progress which has marked its advancement. Two features are of marked significance: one is the fact of the need of preventive and curative dental public health service; the other is the striking fact that the dental arm of the medical profession must

adjust itself to new professional and community demands. In both of these outstanding facts we are in full agreement.

NUTRITION AND GROWTH IN CHILDREN.*

BY WILLIAM R. P. EMERSON, M.D., BOSTON.

HEALTH education is necessarily a matter of slow development. Responsibility for public health is one of the later achievements of civilization, and until comparatively recent times a consciousness of personal and family standards of health was as far as we were able to go. The broader realization of community responsibility has most clearly been aroused in connection with those diseases which have the most threatening aspects. Tuberculosis is an example, because every family feels that the specter of this disease may not be far away from its own group.

Malnutrition, on the other hand, is a condition that has been largely overlooked, for the reason that the malnourished child is up and about, has no rise in temperature, and does not appear sick. Consequently, children who are retarded from two to four years in growth, who present an average of nearly six defects, who are toxic from focal infections, from overfatigue, improper diet, or faulty food and health habits, are considered well even by the medical profession, and until very recently have had no share in a community health program.

With overcrowded clinics and overburdened physicians, our resources have not yet been sufficient to provide for the sick and those imminently threatened by serious infection. The human body—the one machine that we expect to make its own repairs—can stand a very wide range of conditions and extraordinary strains. Therefore, the tendency has been to concentrate on the cure of disease rather than on its prevention. But preventive medicine is now looking to the causes of disease in order to eliminate them, and it is in its relation to this field that I ask your consideration of the subject of nutrition and growth.

PREVENTIVE WORK WITH CHILDREN.

Every one who has had experience in a children's clinic is accustomed to meet a stream of children, many of whom have been well known in other clinics. They are not sick in the ordinary sense of the term, and their diagnoses usually read "general debility," "no disease," or "undernourished." Herein lies a fertile field for the spread of disease, and from the ranks of these children comes a never-failing supply of chronic invalids, hypochondriacs, misfits, and failures in later life. Physical unfitness in adult life is the result of neglected childhood.

In 1908, I selected a group of these undernourished children and formed a class, to determine, if possible, the cause of their condition. Looking back through fourteen years' study of the problem, I find that the following have been considered in turn as primary causes of malnutrition, only to be discarded or relegated, one after the other, to a position of secondary importance: (1) poverty and insufficient food supply; (2) improperly cooked food and consequent indigestion; (3) bad air; (4) heredity; (5) syphilis; (6) tuberculosis, and (7) self-abuse.

Finally, a survey of thousands of cases clinically studied showed that the chief fundamental causes are five. Arranged in the order of their importance, they are: (1) physical defects, especially nasopharyngeal obstructions; (2) lack of home control; (3) overfatigue; (4) faulty food habits, with insufficient and improper food, and (5) faulty health habits.

By means of a program which aims at the removal of the cause, we are able to demonstrate that malnutrition can be corrected in practically every instance.

HOW TO IDENTIFY MALNUTRITION.

At the present time, our only standards of growth are tables derived from the weighing and measuring of mixed groups of healthy and sick children, including more than one-third presenting an average of six medical defects. The resulting figures, while safe for use as a minimum standard, do not represent ideal conditions, and 5 or 10 per cent. above the average is a better standard of optimum weight.

The relation between weight and height is taken as the best single test of nutritional condition, because it serves as a quick basis of selection, to be verified later by thorough examination and clinical observation. Since the tables used represent average, and not normal, weight, it is a conservative statement that a child who is habitually 7 per cent. or more under average weight for height is in need of medical care. Similarly a child who is 20 per cent. or more above the average is approaching a condition of serious overweight. This "safety zone" provides for natural variations in type and build, and careful observation shows that children outside of this range in weight invariably present other clinical evidence of the need of care.

EXAMINATIONS.

The Physical-Growth Examination.—A study of various groups of so-called well children and others, including "contact" cases, who had been under medical care, brought out the fact that with the usual type of examination only

*Read before the Section on Pediatrics, 73d annual session, American Medical Association, St. Louis, May, 1922.

a small number of the defects requiring attention are discovered, and many children in need of special care are overlooked. The most common of the overlooked defects are inflammatory processes in the nasopharynx.

To overcome the risk of error, a complete physical-growth examination has been worked out, with a comprehensive and detailed form, which, although it can be expeditiously made, yet furnishes the physician a true and complete picture of the child's condition. This examination is similar to that required in the Army, under which approximately the same proportion of physical unfitness that we find in children was revealed by the draft for selective service.

The physical-growth examination discloses with remarkable regularity the following defects in underweight children: fatigue posture, including round shoulders, ptosis, protruding abdomen, and flat feet; spinal curvature (in 20 per cent. of cases); pallor, lines under eyes, and anxious expression; mouth-breathing, enlarged anterior cervical glands, and other signs of nasopharyngeal obstruction (60 per cent. of cases); flabby muscles (tested by feeling the upper arm), and mental apathy or overstimulation.

By fatigue posture we mean the stooped and bent position commonly associated with senility. We say that the aged are "broken down." The term applies equally well to the malnourished child. The body weight does not sustain the height, while the spinal column continues to grow and "buckles"—a term suggested by Mendel.

As the child approaches normal weight, there is likewise clinical evidence of a transformation that is both physical and mental. There is a return of color and a glow of health that is unmistakable. Normal reactions appear, restlessness and irritability diminish, and the child becomes less "finicky" in his tastes. Parents frequently state that the patient "has become a different child."

In a certain number of cases that do not respond promptly to treatment, we find, among the more obscure causes, pyelitis, intestinal parasites, gingivitis, anaphylaxis, cardiospasm, toxemia from overfatigue, improper food, and faulty food and health habits. The removal of all physical defects is necessary in order that the patient may be "free to gain" and to respond to the other features of the nutrition program.

The Social Examination.—Further than this, a social examination is needed that has to do with the child's entire 24-hour program. In addition to the first examination, made in connection with the case history, we have the parent bring in each week a 48-hour list of the child's activities, with a complete diet list for the same period.

Many cases of overfatigue are revealed by this 48-hour record, the significance of which as a cause of malnutrition has been imperfectly understood. Overfatigue explains to a great degree the lack of results from physical training. Children who are underweight should be given rest instead of corrective exercises until they come up to average weight for height.

The Mental Examination.—There is a mental retardation that frequently accompanies retarded growth.[1] This has been further demonstrated by Dr. Bird T. Baldwin in a recent report and also in studies of standards of growth in Detroit,[2] and is to be observed among any group of malnourished children of school age. It is often difficult to tell the difference between mental retardation and mental deficiency, so marked is the retardation; and a careful clinical examination is needed. A valuable test is the result which follows the introduction of rest periods into the school program, when it is found that children make better progress with less actual time spent in study.

These three examinations, then, physical, mental, and social, are an essential part of our nutrition program, which is planned to attack the problem of malnutrition from every side.

THE NUTRITION CLASS.

The center of the program is the nutrition class, with weekly meetings of mothers and children, under the care of a trained nutrition worker, with medical supervision. By dealing with these malnourished children in organized groups of from 15 to 20, and requiring the attendance of the mothers, we are able to care for many more cases in less time than would be possible under the individual case method. Instead of trying to relieve the mothers of responsibilities which are properly theirs, we hold them to strict account for the training of their children in correct food and health habits. The health education they receive through the nutrition class is an important factor in effecting permanent results, and also helps them in caring for the other members of the family.

To meet the need of these children for shorter intervals between meals and more frequent periods of rest, midmorning and midafternoon lunches and rest periods are made a class regulation. Incidentally, it is often found that the decline in weight is arrested and the upward climb begun with an actually decreased intake of food. A child losing on three meals a day at the usual interval may gain on five lighter meals of a lesser total caloric value.

Measured feeding is applied through the weekly diet list, and the number of calories recorded on the weight chart, where it affords a significant basis of comparison with the rise and fall of the weight line. The child is able to follow the graphic record of the chart, not only in his own case, but in that of others, and

a healthy spirit of competition is thus developed. Errors in diet as disclosed by the 48-hour record are corrected, and suggestions are made to meet the individual needs from week to week.

We aim to get children well in their own homes, but special cases occasionally call for complete control 24 hours in the day. For these, it is necessary to have specially equipped stations to which they can be sent until they are clearly entered on the road to recovery. A nutrition camp, properly organized, is a valuable adjunct to the program.

In general, segregation is neither necessary nor desirable, and when established without a thorough remedial program, defeats its own purpose. This has been exemplified in the history of open-air schoolrooms, which tend to become congested and lose their distinctive function because no steps are taken to make the children "free to gain," or to see that the school treatment is followed up in the home.

Under ordinary circumstances, the 48-hour record is an adequate substitute for full control. By this means we are able to follow with reasonable accuracy the course of the child's life, and to see where there are weak points and strains that require special attention. In the weight chart we have a sensitive indicator, registering unmistakably all changes in condition that affect the child's health. The weekly weighing of the child of preschool and school age is nearly, if not quite, as valuable in diagnosis as the daily weighing of the infant.

SUMMARY.

The various features of this program can be grouped under four heads, which represent the forces affecting the child's health which must be coördinated to insure success. These four forces are: the home; the school and other agencies; medical care; and the child's own interest. The program may be summarized as follows:

1. Weighing and measuring as a means of identification.
2. Diagnosis based on complete physical-growth, mental and social examinations.
3. Removal of physical defects as a prerequisite for successful treatment.
4. Measured feeding (48-hour diet record).
5. Midmorning and midafternoon lunches.
6. Midmorning and midafternoon rest periods.
7. Regulation of physical, mental and social activities to prevent overfatigue (48-hour list of activities).
8. Nutrition classes for the treatment of malnutrition.
9. Nutrition or diagnostic clinics for problem cases.
10. Average weight for height as a minimum standard of nutrition and growth.

270 Commonwealth Avenue.

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OSTEOMALACIA: ETIOLOGY AND REPORT OF A CASE OCCURRING IN AN IMBECILE WITH PSYCHOSIS.

BY NEIL A. DAYTON, M.D., WRENTHAM, MASS.

Senior Ass't Physician, Wrentham State School.

ETIOLOGY.

The subject of Osteomalacia first came to the attention of the medical world a little over a century and a half ago. A disease accounted rare in this country, it has not drawn serious attention from our investigators, at least not sufficient interest to warrant more than one or two efforts to solve the problem of etiology. To our confrères in other lands has come the greater opportunity, large numbers of cases have been literally thrust upon them to quicken their interest and to serve as a constant stimulus for productive work on their part.

One of the first theories and, in fact, one which has held a prominent place in all discussions relative to etiology since, has been that the process is essentially due to the action of an acid. Boerhave in 1800 insisted that acidity of the blood was the causative agent. In 1847 Schmidt found lactic acid in the bones and this did much to strengthen belief in the acid theory. Virchow considered the disease a hyperemia, the acids of the blood dissolving the earthy salts from the bones chemically. These explanations were received as satisfactory for a great many years. However, the more modern conceptions of acidity have revealed these theories in their true light. We know now that such a tremendous imbalance, with marked depletion of alkali reserves as they imply, is not only at variance with our present knowledge of blood reactions, but would be incompatible with life.

Pommer and later Cohnheim believed that bones were living tissues which were constantly undergoing anabolism and catabolism and that the formation of uncalcified bone was the chief feature of the disturbance. Thus, over thirty-five years ago, the first important suggestions were made, ones which have served as a foundation for recent research.

Arcangeli reported his discovery of the "diplococcus osteomalaciae hominis" and claimed cure by vaccine in thirteen cases. Infection and the resulting pathology is considered by Morpurgo as being most important.

The relationship existing between osteomalacia and the glands of internal secretion has, without a doubt, furnished the most interesting

chapter in reference to the etiology of the process. In 1879 Fochier noted recovery in a clearly defined case following Caesarean section with removal of the uterus and adnexa. For years this operation was done with recovery in many cases. Fehling observed a preponderance of cases among women particularly after repeated pregnancies and advocated removal of the ovaries. This author announced his belief that disease of the ovaries caused a sympathetic paralysis of the vasomotor system with relaxation and influx of blood to the bones, resulting in an abstraction of calcium. Very shortly several operators reported the removal of atrophic or cirrhotic ovaries from their patients with this disease. Cramer[1] supports Fehling's views in a convincing manner. In one of his cases he removed the ovaries during pregnancy and saw healing take place with continuance of the pregnancy.

These investigators were not alone in ascribing the disturbance in bone metabolism to endocrinopathies. Hoenicke was the first to lay stress on the simultaneous occurrence of goiter and osteomalacia and he considered that he found such a pathology in all of his cases. Erdheim compared the changes following extirpation of the parathyroids to those found in osteomalacia. Bossi first removed the adrenals from goats and noted alterations in bone structure comparable to those in his series of cases. He consequently advocated adrenalin as the indicated treatment. In the Wertheim clinic Babs presented a series in which he considered the pituitary at fault. He points out the fact that diminished activity of the pituitary and hypophysis is the result of hypersecretion of the ovaries and subsequently administered extracts of the former with good results. Scipiades[2] thymectomized dogs and produced an osteoporosis which he considered comparable to the bone findings in osteomalacia. Other observers[3 4 5] are not so emphatic in placing the responsibility on one organ, but consider the process a pluriglandular complex.

The cases in this country have not shown the endocrine anomalies observed abroad. In his report of sixteen cases Dock[6] found no suggestion of such imbalance. Barrie's collection[7] is likewise negative. After investigation of this particular etiological factor Nadler's summary[8] is significant, "There is no real evidence that the frequent and manifold manifestations of endocrine disturbance occurring in osteomalacia are a cause rather than an expression of the same metabolic disorder."

Other investigators of osteomalacia in this country have considered the entity from another point of view, or rather have added conclusive proof to the unsupported theory of one of the older writers (Cohnheim). In 1905 Goldthwait, Painter, Osgood and McCrudden found a negative calcium balance in their study[9] of the disturbance. McCrudden pursued the subject further along the same lines and his explanation[10, 11] of the process is the most lucid to be found in the literature. He considers that when there is an unusual demand for calcium elsewhere than in bone an abnormal catabolism of bone tissue occurs. If, at this time, anabolism fails from any cause the new osteoid tissue laid down is poor in calcium and osteomalacia results.

Previous to the last decade the larger number of cases have been observed in women, particularly those at the height of reproductivity. The material brought forth by the recent war, however, would seem to strike a balance between the sexes. Thus Fromme,[12] in his Göttingen group, found that young males performing heavy manual labor were chiefly affected. The dietary of these lacked foods supplying phosphoric acid, namely cheese, rice, fish, egg yolk, meat and butter; and the author connects this fact with the disrupted bone metabolism. He reaches the decision that hard physical labor quickly undermines the health of those living on a meagre diet, especially when they are in the period of growth demanding that the intake surpass the output. Pain of great severity chiefly affecting the extremities was prominent in this series and was also observed by Buttenweiser in his report[13] of three non-puerperal cases. He questions a concurrent muscular affection which might produce the spasmodic pain of such severity. That the convulsive movement of muscles in the extremities is caused by compression of the spinal cord and nerve roots by diseased vertebrae is his final conclusion, however. The dietary defects observed by Fromme were also present in the cases of Porges and Wagner.[14] In less than eight weeks these authors saw twenty cases which seemed to be due to insufficient diet both in quality and quantity. This factor was emphasized by the recovery of four cases without treatment other than a balanced diet.

Among other symptoms Porges and Wagner found a lowered carbonic acid tension of alveolar air in a portion of their cases. This supports the previous work of Novak and Porges[15,16] demonstrating similar findings. The latter report sixteen cases with a definite lowering of the CO_2 tension varying between 6.26% in an inactive case and 4.60% in one with intense symptoms. This increase of acidity, in their opinion, gives the blood an increased capacity for both liberating lime salts and carrying this accumulation in the blood stream.

The incidence of osteomalacia in India has been carefully studied by Scott.[17] There the familiar causative factors are clothed in new garments. Or rather various racial and religious elements lend a fanciful coloring to the facts. The author's eighty-one cases were all observed in women, a third of these being Mohammedan and living under the "Purdah" sys-

tem. Under this the wives rarely leave the home after marriage but spend their lives in dark, damp and unsanitary dwellings, doing the routine housework and caring for their children. Those of the wealthier classes do not have these duties to provide occupation and, the majority being illiterate, they simply sit doing nothing the greater part of the day. The remaining cases were mostly Hindus. These were not strictly purdah but likewise they leave their houses, but seldom, a death or marriage in the family being about the only occasion for getting into the open. Child marriage was the rule, the average for the group being 13.2 years. The drain of lactation was prolonged for an unusually long period, 2.37 years being the average age of weaning. The same writer also published the laboratory findings[18] in the same series. It was found that the calcium content of both blood and urine was uniformly increased. During pregnancy or lactation the increase in the urine became a deficiency but the elevated calcium content of blood was not affected.

Patel and Hutchison[19] confirm a part of Scott's observations in their study of 108 cases in Bombay. They also found a preponderance of patients among the Mohammedans who observe strict purdah while other sects enjoying more freedom were rarely affected. They conclude that the lack of fresh air and exercise, the result of the purdah system, is by far the most potent factor in the production of the disease. In this connection it is interesting to note a similar etiology in a study[20] of osteomalacia in primates. The disturbance developed in animals confined in small, dark and poorly-ventilated cages; those allowed freedom and sunlight never developed the disease.

Dalyell and Chick[21] saw over six hundred patients with osteomalacia in Vienna in 1920. The diet was very meagre, consisting mainly of bread and vegetables, with small quantities of flour and sugar. The lack of fats was self evident and they sought to prove the importance of these elements by adding them to the diets of three of four different groups as follows: (1) sugar and cereals, extra calories without extra fat; (2) vegetable fats, margarine and olive oil; (3) butter and eggs; (4) cod-liver oil.

Only slight improvement was noticed under (1) but recovery followed the addition of fats, cod-liver oil exerting the most beneficial influence. The authors considered it significant that the relative therapeutic value of the fats used compares roughly with the content of the fat-soluble vitamin "A." A parallel investigation was conducted by Hume and Nirenstein[22] who found similar pronounced dietary defects in their series of 177 cases. They endeavored to replace the fat deficiency by the use of a plant product (crude rape oil) and cod-liver oil. These were administered to six groups in the dosage indicated: (1) 100 gm. plant oil with phosphorus, weekly; (2) 150 gm. plant oil with phosphorus, weekly; (3) 200 gm. plant oil with phosphorus, weekly; (4) 100 gm. cod-liver oil, weekly; (5) 150 gm. cod-liver oil, weekly; (6) 200 gm. cod-liver oil, weekly.

The smallest dose of the cod-liver oil was found to be more efficacious than the largest of the plant oil, the recoveries being 91% in the former and 72% in the latter. The smallest dose of the plant oil gave the poorest result, while the 200 gm. dose of the cod-liver oil showed 100% recoveries.

Of particular interest to psychiatrists is Van der Scheer's statement[23] that osteomalacia is forty times as prevalent among the insane as in general hospital admissions. If the same proportion holds true in this country it would make us believe that Dieffenbach is right in his accusation[24] that osteomalacia is not an uncommon disease but that we simply fail to recognize it.

CASE REPORT.

The following case is reported with the kind permission of Dr. Walter E. Lang, Superintendent of the Westboro State Hospital, the observations being made while the writer was on the staff of that institution.

Westboro S. H. Case No. 10641, N. H., a white female, single, of thirty-six years, was admitted April 8, 1913.

Family History.—Paternal cousin is said to have had a mental disturbance and to have required hospital care. Father alcoholic.

Personal History.—The family realized when the patient was very young that she was peculiar. Their expression that they have cared for her throughout her life "like a child of three" is particularly significant. She attended school until ten years of age, but made no progress. Remained at home under constant care of parents until admission.

History of Psychosis.—This was gradual in onset dating from several months before admission. Her personality change manifested itself in noisy talking and irritable outbursts of temper, wholly without provocation. These episodes increased in frequency and intensity until she was frankly destructive and assaultive.

Physical Examination. — Poorly nourished. High, narrow and arched palate, ear lobes attached. Face long and narrow, forehead low and deeply wrinkled, chin receding. Thick lips, marked facial asymmetry and teeth poor. Thorax narrow and deep, ribs and scapulae prominent, lungs and heart clear. Gait uncertain. Menses irregular and delayed. Urine negative. Wassermann, done later, was negative.

Hospital History.—On admission the patient showed little conduct disturbance, was apparently contented and happy. Physically she was weak and remained in bed the greater part of the time for several weeks. Ate ravenously and, in fact, this factor was constant throughout her hospital residence. The details of her mental examination and other tests will not be given

as they have no particular bearing on the case from a medical standpoint. There is one point which should be mentioned, and that is the rapidity of deterioration from the onset of the psychosis. While no psychometric was done, judging from the mental examination, her mental age on admission was approximately seven years. When I first saw the case in Sept., 1919. her mental rating could not have been over 2.5 years. If we recall that the patient has shown little change in mental status up to the age of thirty-six, it is significant that her psychosis, progressive mental enfeeblement and (I believe) the onset of her physical illness should go hand in hand as it were.

In abstracting the hospital history of the case only those points having a possible bearing on her final illness will be enumerated. During her stay of a little over seven years twenty-nine casualty reports were recorded. Twenty-two of these were minor injuries, the result of falls without apparent cause. That is, the patient fell rather from inability to manage the lower extremities than impediment. Moderate swelling of the lower extremities with some discoloration is mentioned following April, 1915, this responding to rest in bed. An apical systolic murmur was noted in November, 1916, and in May, 1918, she was placed in bed and given digitalis for this recurrence, with marked improvement. A few months later the patient's inactivity gave cause for remark and it was reported that she spent the day practically in one position, asking assistance in moving about the ward. After October, 1918, decreasing inclination to get about unassisted, was observed, and the patient required a great deal of personal care.

History of Present Illness.—Before proceeding, it will be well to make one point clear. It must be recalled that the patient is a low-grade imbecile whose coöperation is practically nil. Consequently the lack of subjective evidence is quite well accounted for. The various barriers blocking the way to diagnosis in cases of this type are self-evident.

Over the last four months of 1919 the patient's physical condition improved, the last quarter recording a gain of 12 pounds in weight. While she lost a certain measure of apathy the untidiness increased. The gait was decidedly abnormal. The patient made no attempt to lift the feet from the floor but simply pushed them along one after the other, the steps being short, shuffling and uncertain. A position of extreme age was assumed, the back bowed and the head raised. In moving about the ward the patient placed her hands flat on the wall or grasped fixtures or articles of furniture to aid in her progress. Evidently the fear of falling was uppermost in her mind as she would cry out shrilly if approached by another. Whether or not this symptom was due to pain or lack of confidence in lower extremities could not be ascertained. Several physical changes had taken place since admission. The skin was sallow and flabby and appeared to be in a state of poor nutrition, wasting of muscular tissue was only slight. The pelvis appeared wider than normal, the ilia being protruding, the whole giving the impression that the patient's abdomen and thorax were about to slip into the pelvis. The thorax was narrowed to a pronounced degree, the increased antero-posterior diameter producing peculiar protrusions of the clavicles and scapulae. The bones of the thorax and arms were soft; in fact it was possible to approximate the radius and ulna of either arm with but moderate pressure. The height was found to be 59¾ inches, a loss of 1¼ inches from that observed on admission, namely 61 inches. The swelling of the feet and ankles returned and the patient was placed in bed the last of January, 1920. She continued uncoöperative, however, and refused to remain. On February 3, 1920, the patient sustained a pathological fracture. According to witnesses she made the attempt to leave her bed and on standing uttered a sudden cry and fell back. Examination revealed a fracture of the left tibia and fibula. The limb was immediately put up in a Thomas splint with foot-piece and overhead suspension. This arrangement permitted free turning of the patient which was done at regular intervals. On the third day the skin over the sacrum gave evidence of breaking down and within a remarkably short time decubitus was well established. On the seventh day an irregular temperature made its appearance, the variations ranging through three degrees, pulse was never over ninety and the respirations not over twenty-four. The specific gravity of the urine varied between 1011 and 1024, the sediment was yellow or white and the large amount of albumen present proved to be the Bence-Jones proteid; lactic acid was present. The hemoglobin rated at 60%, the red cells 3,400,000 and the white cells 12,000 in the blood count. The differential produced polymorphonuclears 87%, large lymphocytes 3½%, small lymphocytes 7½%, eosinophiles 2%; there were also a number of old, almost entirely disintegrated, red cells. Blood culture positive for staphylococcus pyogenes albus. Roentgenograms by Dr. R. M. Chambers revealed fracture left tibia in the middle third and fracture left fibula, upper third; shadow definite throughout with no evidence of localized pathological process at the seat of fracture. The patient did not progress satisfactorily, the irregular temperature continued and there was little evidence of union in the fracture. During the seventh week subcrepitant râles were heard over the right lower lobe posteriorly; two days later the left lower lobe became involved and within an additional three days the patient died.

DIAGNOSIS.

While the rheumatic affections were thought of at first they were, of course, ruled out by the pathological fracture. The other conditions suggested by this symptomatology were osteomyelitis, multiple myelomata and osteomalacia. Osteomyelitis is more prevalent in younger subjects, there would be some indication of the port of entry of the infecting micro-organism and we should expect the disease to be more rapid in its course. A stricter localization of symptoms would be anticipated demonstrable by x-ray. Multiple myelomata or Kahler's syndrome has a preference for the bones of the trunk, thorax and skull and the tumor formations are frequently palpable if not visible. There is reason to believe that the pain has been constant while intermittency would be expected in myeloma. The blood revealed no myelocytes and the anemia was only moderate; the Bence-Jones body might be present in either disturbance. The characteristic localized rarefaction, so diagnostic in plates, is absent and the alterations in structure indicate homogeneous change. We should expect also that the myeloma patient would show much less impairment of the powers of locomotion. On the whole, osteomalacia most closely coincides with the symptom complex. The disease has been of long standing, apparently being in its early stages when the patient was admitted seven years previously. Pain and lack of confidence in the lower extremities have been constant. The patient has walked slowly and cautiously in bent position, using any means of support happening to be at hand. The bones are generally soft throughout the body, the thorax, pelvis, and lower extremities, being mainly involved with loss of 1¼ inches in height. Moderate increase in weight was followed by fracture without force other than weight of the body. While the pelvis is the common location of bone changes in this disease we find that the lower extremities are frequently affected in non-puerperal cases.

NECROPSY.

To be brief, only positive findings will be enumerated. Right lung weighed 510 gms., consolidation lower lobe posteriorally. Heart revealed calcareous deposit cusp of mitral valve. The uterus and adnexa were rudimentary, total weight 37.5 gms. Section above and below fracture of left tibia showed medullary space much larger than normal and occupied, in part, by a few cubic centimeters of a reddish mucoid material. The cortical substance was greatly diminished, varying in irregular outline from one millimeter to one centimeter in thickness. The inner surface of the bone was not of normal hardness but there was a thin layer, just beneath and involving the thickened periosteum, which was of normal consistency. The ribs were very soft and elastic, several sections revealing increased and widely-divided cancellous tissue of soft consistency, the only suggestion of bone formation being a thickened periosteum. The vertebra exhibited practically the same characteristics with possibly a thicker outer shell. This collapsed on moderate pressure, however. The calvarium sawed easily and showed increased medullary substance of bright red color. There was no evidence of tumor formation in any of the bones. It was suggested by Dr. W. E. Lang that the patient's peculiar gait might have had a cerebellar origin. With this thought in mind gross sectioning of the brain was done with negative results, the structure being homogeneous throughout.

Microscopical Examination.—Most unfortunately the demineralized and mounted specimens of bone were misplaced and no examination was made. The ovaries were interesting. They showed marked amount of stroma with thickened blood-vessel walls. The Graafian follicles had lost their active appearance and thick dense substance (connective tissue?) took the place of their usual thin wall, lined with several layers of epithelium. The ovum within these showed as a minute vacuolated body. There were a few corpora leutea. In brief, they were considered as fibrotic ovaries with degenerated follicles.

COMMENT.

1. Diagnoses requiring subjective evidence are made with difficulty in the mentally unbalanced.

2. Possibly etiological factors in this case are: sedentary life and disinclination to exercise progressing to almost total inactivity.

3. It is to be noted that the psychosis, the onset of progressive mental enfeeblement and the early stages of the somatic disease were synchronous.

4. The findings refute the theory that osteomalacia is due to hyperactivity of the ovaries. It is to be doubted that these organs were sufficiently developed to have attained even normal activity.

I wish to thank Dr. M. M. Canavan for her kind assistance in the examination of specimens.

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A CASE OF SUBCUTANEOUS EMPHYSEMA DUE TO PNEUMATIC RUPTURE OF THE RECTUM.

BY PHILIP J. FINNEGAN, M.D., SALEM, MASS.

The following is the report of an industrial accident, unusual in its results as compared with others incurred in a similar fashion.

J. W., aged 42, works in the snagging room of a foundry; snagging cleans the dust, scale, and foreign matter off the face of the castings after they are cooled and taken from the moulds. The cleaning is done by abrasive wheels and the refuse goes into a receiver, which the patient was cleaning out and thus got covered with dirt. When the five o'clock whistle blows, a favorite way of brushing the clothing is to "dust off" with a high pressure air hose, which has 70-80 pounds pressure to the cubic inch.

One afternoon in April, 1922, J. W. was being "dusted off" and was standing with his legs spread apart, while another employee worked the hose. When the back of his trousers was being cleaned, J. W. jumped into the air and complained of pain in the rectum. He went home, although he felt weak. About one hour afterward, he sent for me because he was "swelling up." On entering the room and seeing him sitting in a chair opposite me, I thought from his appearance that he had a double peritonsillar abscess.

The patient had a slight cough with moderate dyspnoea and was a little cyanotic; his temperature was subnormal. On palpation, the swelling was soft and showed marked crepitus, which extended from the angles of his jaw to his toes. The air hose had passed some air, but probably not its full force, through his anus. Rectal examination showed no tenderness and no signs of laceration. There was no abdominal tenderness or muscular spasm; there was no nausea or vomiting. The crepitus was most marked in the neck, the chest walls, and the abdominal walls: liver dulness could not be made out.

The man was brought to the Victoria Hospital and placed on a headrest on account of the dyspnoea and the cough. About five hours after the accident, nearly five ounces of bright red blood was passed by rectum; still there was no change in the abdominal signs. The temperature was normal after the first night until the third morning, when there was an increase to 100.2, accompanied by slight tenderness low down in the left lower quadrant of the abdomen without any muscular spasm. The next day both temperature and tenderness were gone: bowels were moving daily without any blood or mucus. The dyspnoea, the cough, and the cyanosis cleared up in about eight days; the crepitus under the skin did not entirely disappear for over two weeks—the neck being the last place to clear.

In this case, there was no abdominal distention at any time, and while a tear in the rectum was suspected, there never was a distinct indication for a laparotomy. The air must have reached the subcutaneous tissues through a laceration of the rectum below the level of the third sacral vertebra, where the rectum is entirely covered by peritoneum. The rectum has no meso-rectum, but posteriorly is in contact with cellular tissue, which separates it from the coccyx. Anteriorly and laterally, the rectum in its upper part is covered by peritoneum, which gradually is reflected to the posterior surface of the bladder about an inch above the prostate tightly and more loosely over the iliac vessels and the ureters. Anatomically, this air under pressure must have reached the subcutaneous tissues through a tear in the rectum below the point where the peritoneum was reflected: for surely no air entered the abdominal cavity. In this event there would have been more marked shock, internal hemorrhage, and the signs of peritonitis. Except on the third day, when there was a slight rise in temperature, there were no signs of peritoneal involvement as would be indicated by tenderness, vomiting, rising temperature, restlessness, and shock.

The man returned to work in about five weeks with no complaint except that he did not feel so strong as before the accident. Otherwise his health is good and he is working every day.

CAESAREAN SECTION IN PRESENCE OF DOUBLE-PNEUMONIA. REPORT OF A CASE.

By Walter C. Seelye, M.D., Worcester, Mass.

Ruth S——, 26 years old, married, housewife, was admitted to the Memorial Hospital on the obstetric service Jan. 5th, 1919, at full term of her third pregnancy and already a few hours in labor. She was acutely ill with double pneumonia of the influenza epidemic type. On admission her temperature was 102.2, pulse, 110; respirations, 30. Her blood pressure was 114-80.

Her first pregnancy terminated in a premature birth at seven months with a dead macerated fetus, in June, 1914. The second pregnancy was delivered by Caesarean section in May, 1916. It was evident from her condition on admission, together with her previous history, that she could not survive normal labor. The baby was large, with over-riding at the symphysis. The choice, therefore, lay between a rapid destructive delivery, and Caesarean section. We felt that the latter course would be the quicker and give less shock, and so she was prepared immediately for operation. On account of her desperate condition with double pneumonia, it was decided to operate entirely under local anesthesia. The usual operative technique for Caesarean section was carried out, using for the anesthetic 1/8% cocaine. Anesthesia seemed complete except for the uterine wall, which was not at first infiltrated. Incision at this point elicited a moderate amount of pain. The uterine wall was then infiltrated, which completed the anesthesia. The operation was performed without any difficulty or delay, but the baby was dead on delivery. It was evident from its condition that it had been dead in utero for probably about twenty-four hours, and that death was probably due to the profound toxemia of the mother. The fetal heart was thought to have been heard before the operation, but the beat was synchronous with the maternal pulse, and could not be definitely differentiated.

The patient was returned to her room immediately after the operation in poor condition: T 101 (axillary), P 140, R 36. She was given stimulation and revived somewhat. She had a stormy convalescence, but in five days her temperature dropped and her pulse slowed down to 110 to 125, regular and of better quality. At this time coughing was frequent and hard, but with less expectoration. The lochia was scanty and somewhat foul, for which she was given douches of sterile water. The stitches were removed on the eighth day after operation, and the wound showed first intention healing. At this time there was heard occasional crackling râles over both lungs, but no dullness on percussion. Incidentally, there developed on the twelfth day numerous small abscesses in the left thigh at the points of intramuscular injections of digifolin in the early days of convalescence. These were incised and drained and gradually cleared up, so that on Feb. 17th she was able to sit up in a chair.

The following day she had a sudden attack of cyanosis and dyspnœa, with rapid, shallow breathing, rapid and weak pulse, associated with sharp stabbing pain in the chest just to the right of the sternum. She improved in about two hours, but similar symptoms recurred about eight hours later, less severe and of shorter duration. From this time, for about a week, she had considerable cough, with some pain in the chest. Otherwise her general condition was good. Examination of the chest by the medical service showed on the right side, absence of breath sounds except at the hilus posteriorly, and metallic tinkling sounds were heard with the spoken voice through the lung, but were most marked posteriorly over the lower lobe. Diagnosis of pneumothorax was made, and verified by x-ray. For treatment an aspirating needle was used, attached to a vacuum pump and bottle, and a large quantity of air was drawn off from the pleural cavity. This caused the patient to cough considerably, and examination showed immediate expansion of the lung.

Convalescence and gaining of strength was progressive until March 29th, when she was discharged, with no signs in the chest, and the right lung fully expanded. The long, severe coughing had produced a hernia in the lower part of the abdominal wound, otherwise the patient was discharged perfectly well. A report of her condition in April, 1922, stated that she was in perfect health.

MEDICAL LORE.

Hippocrates was thoroughly conversant with the treatments as practiced today by osteopaths and chiropractors. His knowledge of the spine and spinal nerves is no more than equaled today. As a surgeon he operated on the skull with a trephine; opened the chest in empyema and hydrothorax. He was a climatologist of no mean degree; he was authority on Public Health and Sanitation. He practiced orthopedic surgery and treated many patients at the Temple (hospital). He removed superficial cancer with the knife and cautery. He was a believer in orthodox medicine. The following is quoted from his writings: "When doing everything according to directions, although things may not turn out agreeably to indications, we should not change the treatment to another while the original appearance remain."—*The Medical Record.*

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A MATTER OF GROWING IMPORTANCE TO PHYSICIANS AND THE PUBLIC.

ONE of the important factors in medical practice is the service rendered by the nurse, and in the nursing profession the great question of the day concerns the education of the nurse and her position in dealing with the physician and her patients. We have seen the rapid evolution of the trained, and to a degree, scientific associate of the physician through successive stages. The original conception of the nurse was a person endowed with intelligence, human sympathy and industrious habits, who could take good care of a sick person under medical supervision. Under prolonged training and study the high grade schools now graduate nurses who are technicians and often become teachers and superintendents of other institutions of learning. The less well endowed schools are ambitious to be recognized as occupying the position and receiving the same recognition as those of higher grades. The nurses, in turn, who have been educated in the smaller schools, desire to be recognized as equals of their more advanced sisters. Other confusing situations relating to the assumption of unusual responsibility on the part of some and the depletion of the ranks of private duty nurses have given rise to apprehension.

The result has been that the whole problem of nursing service and nursing education has aroused concern in the minds of physicians and students of economic problems. These questions arising in the minds of a few at first, have extended to the profession as a whole and now have reached the stage where the American Medical Association has been led to feel a definite responsibility. This feeling found expression in the address of the speaker of the house of delegates at the last session in St. Louis as follows:

"THE TRAINED NURSE AND THE NURSING PROBLEMS."

"During the past few years and particularly the last two years, there has been much discussion and considerable criticism by both professional and lay individuals of the trained nurse, nursing service, training school, curriculums for nurses and the nurse in health and industrial work. A study of these discussions, as well as personal experiences, causes one to feel that there is immediate need for the consideration of the entire subject of training schools, nursing education, hospital and graduate nursing service and the nurse's relationship to the patient, the doctor and the public. There is an interrelationship that we cannot ignore. Our interests, the interest of the public and the future interest of the nurse, demand that we concern ourselves with this problem and expedite its satisfactory solution.

"I am not unaware of the surveys and findings made and reached. I am also familiar with the attitude of certain nursing organizations and groups, and also with the ideals sought by lay leaders and organizations. Our profession has yet given no definite expression of its opinion and judgment. The time has come for us to do so, and the public is desirous of receiving our findings and recommendations. I therefore recommend that you create a special committee, to be appointed by the president, with the advice of our trustees, to make a thorough survey and study of the problems and submit its report and recommendation at our next annual meeting.

"In connection therewith hearings should be accorded to all groups concerned in the providing of nursing assistance in the prevention and treatment of disease. Our Association should assert itself in formulating an acceptable status for the trained nurse, and the educational fundamentals requisite for her work of service."

His recommendations were submitted to the Reference Committee and this committee made its report in these words: "Your committee approves the speaker's recommendation for a survey of the nursing institutions, and recommends its reference to the Council on Medical Education and Hospitals. They, if they deem it advisable, may submit this to a subcommittee. We recommend that a report be received from this council on the subject at the next annual session."

This report was adopted and the Council on

Medical Education and Hospitals has appointed the following committee:

Dr. Robert W. Lovett, Professor of Orthopedic Surgery, Harvard Medical School, Boston, chairman.

Dr. Austin Flint, Professor of Obstetrics and Gynecology, University and Bellevue Hospital Medical College, New York.

Dr. Lawrence R. De Buys, Professor of Pediatrics, Tulane University School of Medicine, New Orelans, La.

Dr. Richard O. Beard, Associate Professor of Physiology, University of Minnesota Medical School, Minneapolis, Minn.

Dr. Thomas McCrae, Professor of Medicine, Jefferson Medical College, Philadelphia, Pa.

Dr. Winford H. Smith, Superintendent, Johns Hopkins Hospital, Baltimore, Md.

Dr. George B. Sommers, Superintendent, Leland Stanford University Hospital, San Francisco, Cal.

This committee is aready at work and is seeking information from all sources.

This matter should arouse the attention of the profession and the committee should have for its consideration all facts that may be of value and opinions of those qualified to give advice.

Conference meetings will be called at an early date. A preliminary report will be submitted by the committee to the Council on Medical Education and Hospitals, March 4, 1923, and the full report will be given to the House of Delegates next June in San Francisco.

The committee has a great task before it and the time is short, hence every one concerned should give careful consideration to the problems involved and give the committee all possible assistance.

THE ACTIVITIES OF THE PUBLIC HEALTH COMMITTEE OF THE MASSACHUSETTS MEDICAL SOCIETY.

This committee has employed Mr. Paul A. Raymond to secure information relating to certain phases of medical practice and opportunities for improving health conditions throughout the state.

The committee has drawn up a questionnaire which has been given to doctors in those localities where there may be opportunities for improvement in existing facilities for service. Mr. Raymond will confer with doctors and others and discuss the matter under consideration and secure as much information as may be available.

The purpose of the committee is primarily to unite the members of the profession in promoting the greatest possible efficiency. If it is found that there are localities where there is a shortage of physicians the committee will be in a position to render an authoritative report and make suggestions.

In addition to determining the existence of a shortage of doctors, the committee will try to ascertain whether the present-day education of doctors has any relation to this condition, and it is felt that the opinion of physicians practicing in rural communities will be of the greatest assistance in the interpretations of the problems relating to the scarcity and the causes which have led up to the situation. The committee is earnestly desirous of whole-hearted coöperation.

The amount of money available for this work is quite inadequate, and the committee would feel encouraged if some additional appropriation could be made. This depends, however, on the attitude of the Council.

WHAT IS INSULIN?

It seems fairly certain that within the year—perhaps within a few months—*Insulin* or *Iletin*, the much-discussed new agent used in the treatment of diabetes mellitus, will be available in quantities sufficient to supply all practising physicians who may care to employ it. Before large amounts of this "serum" are found on the market, it seems to us wise to inform the profession on certain points in regard to its substance and its action on the human body—also to sound a note of warning to the over-enthusiastic.

Dr. F. G. Banting, of Toronto, the young surgeon responsible for the production of this therapeutic agent, recently addressed in New York City a meeting open to the public. To an enthusiastic audience which filled the hall to overflowing, he recounted the history of the discovery of *Insulin*, described the active principle, and reported some results of its use up to the present time.

Insulin, or *Iletin*, is a solution of the active principle of the internal secretion of the beef pancreas. This active principle is extracted from the fresh pancreas by means of a mixture of alcohol and hydrochloric acid, in which it is soluble. The *external* secretion (in which trypsin is the most important), not being soluble in this mixture, is left behind in the residue. The final product is a sterile solution of the active principle of the internal secretion of the beef pancreas.

A unit of *Insulin* is that amount required to reduce the blood sugar of a 2 kilogram rabbit to the point of convulsion. This is the only method of standardization of the unit strength used at present, and is not strictly accurate. It is hoped that the variation in the strength of various units will be soon eliminated. The amount of total glucose in the diet utilized in the presence of one unit of the principle has varied from 1.5 grams to 7 grams in individual patients.

Insulin is given entirely by hypodermic injection, and Dr. Banting believes its effect to be only temporary—never lasting longer than eight or ten hours. Injection is given usually

three hours before feeding, and never more than three or four times a day. It is to be used at present only for severe cases of diabetes, and with the utmost caution. It is an extremely powerful agent, and demands even *more accurate quantitative diets than are used without it!* The great danger lies in producing coma and convulsions due to hypoglycemia, which is readily produced by withholding an adequate amount of food after injection of *Insulin*. Much harm may be caused by the use of this active principle in conjunction with *inaccurate* diets or in the absence of extremely close observation.

Some striking results have been produced by the use of *Insulin*, and without question much more will be done; but we urge the profession at large to approach the question with conservatism and to avoid indiscriminate use of this wonderful therapeutic agent until experience has demonstrated more exact knowledge of its possibilities and limitations.

CHRISTIAN SCIENCE INDIFFERENCE.

In an editorial the *Journal of the American Medical Association* (December 9, 1922) reports the death of two children from diphtheria. In both cases the parents were believers in Christian Science and antitoxin was not used.

These parents probably would have criticized those who neglected to provide food or clothing for their children. They would have insisted upon the investigation of deaths resulting from negligence on the part of trolley car or automobile drivers. They would probably agree that deaths due to these forms of neglect should be prevented in the future and that the contributing human agents should be punished, and, further, that suffering of children resulting from lack of care would warrant the state in assuming oversight of these neglected persons. The state punishes the man who fails to provide proper care for injured, sick or needy animals. Certainly some of our Christian Scientists and anti-vaccinationists seem more concerned about animals than about children. Must we wait for the slow and gradual development of knowledge and human sympathy to bring about a different attitude, or must the state step in and assert its power in protecting those unable to protect themselves?

Are we failing to act through a mistaken conception of liberty or because of timidity?

The dying declaration of Madame Roland, "O Liberty! How many crimes are committed in thy name!" seems to have a startling application at the present time.

RICKETS.

Considerable investigation has been carried on in the last few years concerning the rôle of calcium and inorganic phosphorus in rickets. Howland and Kramer in 1921 concluded that serum phosphorus is greatly reduced in the active stage. In mild rickets associated with tetany the serum phosphorus is normal or increased, while the calcium is reduced. Howland and Kramer believe that rickets does not occur when the product of the calcium concentration multiplied by the phosphorus concentration, expressed in milligrams per 100 c.c. of serum is forty or more. Shipley, Park, McCollum and Simmonds, *American Journal Diseases of Children*, January, 1922, contend that there are two kinds of rickets, one with a normal or nearly normal blood calcium and a low phosphorus, and the other with a normal or nearly normal phosphorus and a low calcium. Tisdall, *Am. Jour. Dis. Child.*, Nov., 1922, finds a slightly lowered calcium and a slightly increased phosphorus in infants with craniotabes, and enlargement of the costochondral functions, but raises the question whether these bony changes signify a true rickets. Lowered calcium and normal or slightly increased phosphorus were also found in infants with active tetany. Von Merpenberg, *Am. Jour. Dis. Child.*, Sept., 1922, finds no reduction in the inorganic phosphate of the breast milk on which infants develop rickets, but confirms the findings of other observers that the inorganic phosphate content of the serum is reduced in rickets.

Hess and Unger, *Am. Jour. Dis. Child.*, Oct., 1922, have discussed the relative significance of clinical, radiographic and chemical examinations in the diagnosis of rickets. Their conclusions are of interest. They believe that the most reliable immediate clinical sign is beading of the ribs, and that more attention should be paid to this. Craniotabes, head sweating, inability to sit or stand at the normal age, delayed dentition, and poor tonicity of the muscles are regarded as unreliable signs, due to their occurrence with other conditions. Roentgen ray examination of the epiphyses has been found unreliable as it is sometimes negative when the diagnosis is otherwise established. It is considered most valuable as affording evidence of healing. These writers agree with other investigators as to the diminution in inorganic blood phosphate in early rickets, often before either roentgen ray evidence is found, or beading of the ribs becomes evident. This is not considered as pathognomonic, however, as other factors may diminish the phosphorus, and occasionally the phosphorus is normal in cases considered as true rickets. The winter prevalence of rickets, increasing month by month until April, is made note of. The authors claim to have found rickets in over 50 per cent. of a group of well nourished breast-fed infants, examined clinically and by roentgen ray at the end of March.

It is interesting in this connection to cite an English view of rickets. Dr. Eric Pritchard,

the president, at the opening meeting of the Section for the Study of Disease in Children, Royal Society of Medicine, October 27, devoted his address to a consideration of rickets: its causation and pathogenesis. (*The Medical Press and Record*, Nov. 8, 1920.) Dr. Pritchard holds that all conditions of malnutrition in infants, if severe and long continued enough, must lead to rickets, because they are all conducive to the development of acidosis and consequently to mineral depletion and calcium impoverishment. In rickets, therefore, calcium is withheld from the bones because required for the more important object of neutralizing the acid bodies. In his belief the causes of rickets, working through acidosis, are multiple, and the prophylaxis and treatment consist in metabolic stimulation.

Little account is taken in these reports of the mysterious fat-soluble vitamine A, which has not been disproved as a causative factor; the influence of sunlight also has not been dwelt on. Knowing the higher incidence of rickets during the months of scanty sunlight, and acknowledging our lack of exact knowledge concerning the parts played by phosphorus and fat-soluble vitamine A, it still seems the part of prudence to treat our rachitics, incipient or active, with sunlight, cod-liver oil, and phosphorus.

PROTEIN MILK MADE EASY.

Dr. E. H. Bartley, in *Archives of Pediatrics*, November, 1922, describes an easy and rapid method of preparing protein milk in the home.

"To a pint or a quart of buttermilk add an equal volume or more of boiling water. The curd separates at once in a flocculent form. Allow it to set 5 to 10 minutes, decant off the supernatant fluid, and add more warm water, let set as before, decant off and repeat this process a third time. This completely removes the whey from the curd. Drain off all the water possible and then add a pint of skim milk and stir vigorously with an egg beater, previously dipped in boiling water.

If we have used a pint of buttermilk to start with we will have the curd of 2 pints of milk in the volume thus obtained, which is usually about 20 ounces. This mixture will then contain approximately 5 per cent. of protein, 2.8 per cent. of sugar, less than 1 per cent. of fat, and 0.5 per cent. of salts.

If the above 20 ounces be made up to one quart with water, it will contain approximately 3.5 per cent. protein, 2.4 per cent. sugar, 0.5 per cent. fat, and 0.35 per cent. salts.

If one quart of buttermilk be taken to start with, a pint of skim milk be added to the curd and made up to one quart with water, the composition will be approximately: Protein 4.6 per cent., sugar 2.4 per cent., fat 0.5 per cent., and salts 0.35 per cent.

If desired, a cereal gruel may be used for making the final volume up to a quart. The protein may be increased by the addition of the whites of 1 or 2 strictly fresh eggs to the quart of food.

MORE ABOUT THE SCHICK TEST.

We are in receipt of a letter from the Medical Liberty League, which, after condemning many of our statements in our editorial of November 30, entitled "An Open Letter," commends us for our statement that "The Schick test and toxin-antitoxin, as with all justifiable medical procedures, are not infallible."

It is only our duty, in this connection, to state that we believe the error in the Schick test is not over 3 or 4 per cent., and with increasing skill in its employment this error should be reduced to almost zero. Immunization with toxin-antitoxin has been shown to be successful in over 90 per cent. of the cases treated with only one series of injections, which is certainly sufficient to endorse its general use.

MORE MEDICAL LAUNDRY.

An interesting controversy seems to have been started between manufacturers and upholders of various drugs and vaccines, and the clarion-voiced abolitionist, De Kruif. Dr. De Kruif, a bacteriologist and pathologist, and not a doctor of medicine, has taken upon himself to discipline the medical profession, through the pages of *Hearst's Magazine*, for its indiscriminate use of proprietory drugs and commercial vaccines. Some of his blows have fallen on tender spots, for he has not evaded the use of proper names. Among others he has named the Bacteriological Laboratories of G. H. Sherman, M.D., of Detroit, Michigan, and we are in receipt of a vigorous rebuttal from these laboratories.

When extremists do battle there is always a suspicion that personal interest on one or both sides may be an activating motive. Conservative bystanders do not mingle in a dog fight. Kansas farmers, like local ball clubs, prefer the cellar position to wrestling with the cyclone.

The JOURNAL is always interested in fair play, and in the present discussion is willing to admit that "much can be said on both sides." We do believe that certain drugs and certain vaccines are of definite value. We do not believe in the indiscriminate use of either drugs or vaccines. We do believe that physicians should know the qualities and indications for use of both the drugs and the biologic products that they employ, and should not accept them on the statements of their manufacturers.

We are willing to condemn heartily the method of practice which makes the physician the mere agent or purveyor of advertised nostrums, easy as practice may be made by these slipshod

methods. We do not believe that Dr. De Kruif is the anointed agent of God, sent to blast and wither the medical profession, which, after all, is performing a fairly useful function in the community. We venture to offer only one bit of advice to the profession at large: Do your own thinking. Do not let the oratorial blasts of opponents or proponents of any brand of diagnosis, prognosis, or treatment, supersede the use of that gift of common sense which a believing public knows that you possess.

News Notes.

The Wachusett Medical Improvement Society.—The regular monthly meeting of the society was held at the Rutland State Sanatorium at 8 p. m., December 12, 1922, Dr. Ernest B. Emerson, superintendent, host. Dr. William B. Davidson, in charge of the x-ray laboratory at the Sanatorium, read an unusually instructive paper on "The Diagnosis of Pulmonary Tuberculosis Plus the X-Ray."

George N. Lapham, M.D., *Secretary.*

The H. A. Metz Laboratories, manufacturers of "The Salvarsans," have announced a marked reduction in the prices of the various sizes of Salvarsan, Neosalvarsan and Silver-Salvarsan. These prices range from 60 cents per ampule for Salvarsan 0.1 gram, Neosalvarsan 0.15 gram and Silver-Salvarsan 0.95 gram, to $1.00 per ampule for Salvarsan 0.6 gram, Neosalvarsan 0.9 gram and Silver-Salvarsan 0.3 gram.

Nutrition Institutes.—From September 25 to November 11 a series of Nutrition Institutes was held in a number of cities under the direction of Nutrition Clinics for Delicate Children. At Hartford an active organization is establishing nutrition classes in public and other schools. The attendance at the institute in this city was sixty including physicians, nurses, dietitians, teachers and social workers. In Denver there is an unusually effective basis for the work in the public schools. Seventy-nine took the course. Among these were selected workers from other cities in the State and a well organized unit from Wyoming. Dr. Emerson was called to Pueblo to address the State Conference of Social Workers, and to Colorado Springs by the Association of School Principals. At Battle Creek one hundred and fifty took the course. The Battle Creek Sanitarium gave effective coöperation and arranged to have a number of the members of its staff train for nutrition work. An institute is now in progress in Honolulu and others will be held this winter in Salt Lake City, Fall River, Newark, Rochester and other cities.

Beverly Hospital.—Following is the program of the monthly clinic held at the Beverly Hospital on Tuesday, Dec. 19th, at 4 P.M.: Fracture and dislocation of bones in foot, fracture of clavicle, osteomyelitis, duodenal ulcer, peptic ulcer, acute lymphatic leukemia, epithelioma of tongue, pneumonia complicating herniotomy under local anesthesia, adenoma with hyperthyroidism.

Dr. R. E. Stone, *Sec.*

Essex North District Medical Society.—The 81st Semi-Annual Meeting of this society was held in Centre Church Vestries, Main St., corner of Vestry St., opposite City Hall, Haverhill, Mass., Wednesday, Jan. 3, 1923. Dinner was served at 12:30. Following the dinner and after the business meeting the following papers were presented: Thos. F. Kenney, M.D., of Worcester, Director of School Hygiene, and full time School Health Officer, upon "Health Education in Schools and in the Community" (30 minutes).

Channing Frothingham, M.D., of Boston, Instructor of Medicine, Harvard University Medical School, upon "Abnormalities in Cardiac Rate and Rhythm and Their Treatment" (30 minutes).

Discussions were invited upon the above matters at the end of the program (5 minutes each).

The American Medical Association, 535 No. Dearborn St., Chicago, Ill., recommends the A. M. A. Physicians' Auto Emblem to replace the green cross. The former has a significance and its sale is limited to licensed practitioners. Price $1.50.

J. Forrest Burnham, M.D., *Secretary.*
567 Haverhill St., Lawrence, Mass.

Miscellany.

AN APPEAL

One hundred Russian university and professional men, mostly scientists, many of them internationally famous, recently exiled from Russia by the Soviet government, are in Berlin in serious circumstances. Local charity is housing and feeding them, but they lack sufficient clothing, shoes and pocket money to get through the winter without acute distress. An appeal has come to the American Relief Administration for $1000 to provide some relief (averaging only $10 a man) for these exiles. Unfortunately all of the A. R. R. funds must be spent for relief inside of Russia. The appeal has been turned over to me. Will the scientific men of America help these suffering scientific men of Russia?

A generous friend, Princess Cantacuzene, of Washington, has given me one half ($500) of the sum needed. I shall be glad to be one of fifty to give $10 each, or one of one hundred to give $5 each, to make up the other half. I will undertake to receive the gifts and send personal

receipts for them, and later obtain and publish in *Science* a blanket receipt from Berlin for the whole amount received and sent overseas.

VERNON KELLOGG.

National Research Council,
Washington, D. C. —*Science.*

REPORT OF CHIEF OF CHILDREN'S BUREAU, U. S. DEPARTMENT OF LABOR.

Grace Abbott, chief of the Children's Bureau, U. S. Department of Labor, shows, in her annual report to the Secretary of Labor, that periods of unemployment react heavily on the children. Many families with two or more children were found to be spending less than $50 a month, including store credits, in studies made in a middle western and a New England city. Nearly a third of the mothers had taken gainful employment.

One of the important events of the year which the report records is the agreement by the National Conference of Commissioners on Uniform State Laws upon a uniform act for the support of children born out of wedlock, and the recommendation of this act to the states for adoption.

Unemployment and underemployment were found to be serious problems in Porto Rico, in a year's survey of conditions affecting children in that island. The infant death rate in 1920 was 146 per thousand births, as compared with 86 in the United States birth registration area.

AID TO A STATE MEDICAL JOURNAL

The St. Joesph's Hospital staff organization, Bloomington, Ill., has passed a resolution setting forth an agreement to purchase supplies and equipment, of advertisers in the *Illinois Medical Journal.*

This action gives to a journal a definite and valuable support. If our hospital staffs and members of the society at large would feel warranted in taking the same attitude, the income from advertising would be increased and the JOURNAL would make smaller demands on the treasury of the society.

SITUATION OF THE DOCTORS IN THE PROVINCE OF NIKOLAEV, UKRAINE.

Dr. Haigh, a member of the Health Committee of the League of Nations, and health expert attached to the Nansen Organization, communicates the following details on the present position of the doctors and health officers in the province of Nikolaev:

"The assistance given to doctors has so far been negligible, and no organization for their relief exists in the province. A few doctors who have friends abroad have occasionally received parcels of foodstuffs.

"All goes to show that in the coming winter the famine and conditions of life generally will be still worse than in the past, unless help is sent from abroad.

"The doctors receive their salaries only after long delays. Their tragic position continues to grow worse. During the past winter some supplies were officially distributed to them, but even this relief has now come to an end. The medical staff must meet their necessities as best they can. Very many doctors are only able to subsist by the sale of their furniture, or any objects which they may possess. Even those who have the best practices are in need of clothing. The poorer doctors who live in remote districts have to rely on the help of such peasants who have themselves managed to escape ruin.

"The situation in the province of Nikolaev gives some idea of the conditions which exist in other parts of the country.

"Without the official ration, which consists of an English pound of maize distributed to a portion of the staff in the hospitals, life would have been impossible in these establishments. This relief has now come to an end. At the present a hospital doctor, if he is paid, receives 27 million roubles (in September this was equivalent to £1, but at the present moment it is less than 8/1-. The hospital sisters receive about 20 million roubles, and other members of the staff still less. A great number of persons belonging to the staff of the hospitals have died at their posts."

This picture clearly shows the tragic position of the Russian doctors in the famine districts, and the urgent necessity for providing them with relief.

THE RECRUDESCENCE OF SMALLPOX IN GREAT BRITAIN.

It is quite possible that the country is on the fringe of a serious epidemic of smallpox. Although the number of cases so far reported are not numerous, yet they are increasing, and they are occurring in far distant districts. Public alarm in consequence has been excited, and it has been found necessary to urge general vaccination upon the community. Several deaths have occurred among the persons attacked; the disease has declared itself in a virulent form, and despite every attempt to prevent dissemination of the infection, this may prove to be powerless amid an unvaccinated population of the extent to which this has spread during the past few years. What has now become clearly evident is that the law as to vaccination, owing to the conscientious clause, has become a dead letter. The anti-vaccinationists maintain that vaccination is unnecessary, and quote statistics in support of their propaganda. These statistics may be sufficient to encourage the evasion of vaccination, but no one can claim that they are of any use in fighting an epidemic of smallpox. This is a point to which the anti-vac-

cinationists are meticulously careful to avoid reference in their literature. An epidemic of smallpox would be impossible if vaccination were general. While admitting the protective influence of advanced sanitation and hygienic conditions, there still remains the risk of infection being brought to this country by aliens, that is, by foreigners in whom the disease has not sufficiently developed to become manifest. Such persons are the focus of infection, and coming in contact with unvaccinated individuals, the condition at present prevailing is the likely result. The moral obligation which rests upon all persons who refuse vaccination has scarcely been taken into consideration. That obligation requires that every citizen should share the responsibility of preventing smallpox by submitting to the prophylactic method of vaccination. It is not to be denied that the freedom from the disease in this country is largely dependent upon those of the community who have been vaccinated: from that freedom the unvaccinated population benefit, and yet they have contributed nothing to secure it. There is also the fact to be remembered that when smallpox rages among unvaccinated persons, an enormous financial burden has to be borne by the State in order to meet the exigencies of the outbreak. Thus in the interests of the whole community the Vaccination Act demands amendment. Either the conscientious clause should be expunged, or alternatively compulsion might be enforced for five years, to be succeeded by five years of optional choice. By this means some check would be placed upon the increase of unvaccination.—*The Medical Press and Circular, London.*

A warning should be read by all in the foregoing article. If the opponents of vaccination were allowed to gain the upper hand, or if the strict interpretation of the antivaccination law is allowed to become obscured by intention or neglect, this danger becomes a tangible reality, as has already happened in certain States of the Union.

ANNUAL REPORT OF THE CHILDREN'S BUREAU, U. S. DEPARTMENT OF LABOR, SUMMARIZES TEN YEARS' WORK FOR CHILDREN.

Ten years' progress in public provision for the care of children is summarized by Grace Abbott, Chief of the Federal Children's Bureau, in the tenth annual report of the chief to the Secretary of Labor, made public today. Since 1912, when the Children's Bureau was established, the number of States having special divisions dealing with child health has increased from 1 to 46; the number providing mothers' pensions has increased from 2 to 40; more than half the States have created commissions to make comprehensive inquiries with a view to bringing their child welfare legislation and administration up to standard, and a similar number have organized State bureaus or divisions dealing especially with dependent and delinquent children. Birth registration in an adequate form has been extended over an area including 66 per cent. of the population, and 42 States are now coöperating with the Federal Government to reduce the unnecessary loss of life among mothers and babies which the registration figures have shown. There has been an increasing appreciation of the importance of linking up State and local child-welfare administration, Miss Abbott declares, and the medical profession is giving more consideration to the social and economic aspects of child health, while social workers have learned the importance of a physical diagnosis before determining social treatment.

"The Children's Bureau does not claim responsibility for these changes," the report states. "It can, however, be said that its investigations furnished the facts on which action was frequently based, and because of the coöperation of experts in child welfare, public and private child-caring agencies and women's organizations, the bureau has been able to focus national attention on some of the most important aspects of child care." Miss Abbott pays tribute to Julia C. Lathrop, whom she succeeded as chief of the bureau just after the preparation of the last annual report, declaring that under her direction the practical value of a scientific research and educational bureau in the field of child care was established. "To what extent it will be enabled to expand to meet opportunities for service," she continues, "is a question of public policy involving a decision as to the relative importance of children and their welfare as compared with other objects of national expenditure." The Children's Bureau's current appropriation, Miss Abbott states, will enable it to meet only a small per cent. of the opportunities offered it for substantial contribution to the welfare of children.

The work of the bureau's tenth year, as described in the report, included studies of the unemployment situation in its effect on children; completion of a "Children's Year Survey" in Porto Rico; coöperation with the children's code commission of North Dakota in studying child labor in that State, particularly on the farms, and with both this commission and a similar body in South Dakota in surveying child dependency and delinquency; study of care for dependent children in the District of Columbia and of the administration of aid to children in their own homes—or mothers' pensions in various States; arranging of conferences on special phases of mothers' pension administration and employment-certificate issuance studies of organized methods for promoting the welfare of children in their transition

from school to work, including vocational guidance; studies of the work of mothers and children on truck farms in Maryland, New Jersey, and Virginia; publication of 37 reports and leaflets, and administration of the maternity and infancy act passed November 23, 1921. The report includes a discussion of the situation created by the decision of the United States Supreme Court last May, holding the child labor tax law unconstitutional.

In reporting on the administration of the maternity and infancy act Miss Abbott states that the funds which it apportioned to the States for the year ending June 30, 1922, did not become available until April, but that payments have been made to 41 of the 42 States accepting the act and that work by the various States is under way. "The widespread discussion of the act has already done much to acquaint women and men with the importance of scientific care for mothers and babies," she declares, and points out that the maternal mortality for 1920 in the United States birth-registration area was the highest among all nations for which recent statistics are available.

[NOTE: This report, like many public documents, does not set forth conditions existing at the present time. There are indications that conditions relating to maternal mortality are improving in some localities.]

TYPHOID FEVER.

THIS, so often called the vanishing disease, has been more in evidence, for statistics show that there was an increase of 1.2 per 100,000 for the year 1921, in the registration area. The total number is over 8000. Only nine of the 34 states in the registration area had a lower death rate in 1921 than in 1920. In New England, Connecticut, Maine, New Hampshire and Vermont showed a decrease. The Metropolitan Life Insurance Company predicts better conditions in 1922.

MORTALITY FROM DIABETES: 1921.

The Department of Commerce, through the Bureau of the Census, announces that about 15,000 deaths in 1921 from diabetes mellitus were recorded in the registration area, which comprises 82 per cent. of the population of the United States. Within this area the death rate from diabetes per 100,000 population was 16.8 in 1921 as compared with 16.1 in 1920.

For the 27 states contained in the registration area of 1917 the death rate from diabetes per 100,000 population was 17 in 1917, 16.1 in 1918, 15.4 in 1919, 16.5 in 1920, and 17.2 in 1921.

There were 792 deaths in Massachusetts during 1921, a decrease of 18 as compared with 1920.

DEPARTMENT OF COMMERCE, WASHINGTON.

SUMMARY OF MORTALITY RETURNS.

Telegraphic returns from 67 cities with a total population of twenty-eight millions, for the week ending December 2, indicate a mortality rate of 12.3 as against 11.9 for the corresponding week of last year. The highest rate (22.1) appears for Memphis, Tenn., and the lowest (6.5) for Duluth, Minn. The highest infant mortality rate (153) appears for Salt Lake City, Utah, and the lowest (13) for Bridgeport, Conn.

The annual rate for the 59 cities which have sent in all weekly reports for 1921 and 1922 is 12.5 for the 48 weeks of 1922; against a rate of 12.0 for the corresponding period of 1921.

Obituary.

JOHN FRANKLIN THOMPSON, M.D.

DR. JOHN FRANKLKIN THOMPSON died in Portland, Maine, December 27, 1922. He had been in poor health for several months, finally succumbing to an attack of pneumonia.

He was 63 years old, having been born in Eastport, Maine, in 1859. His early education was acquired in Portland, and after graduation from the High School he entered Dartmouth College, graduating with the degree of A.B. in 1882. His standing in college was high, and in addition to receiving the Phi Beta Kappa key he was given the degree of A.M. His medical education was acquired in Bowdoin, graduating in 1886, and he was afterward given a position on the faculty as Professor of the Diseases of Women.

Dr. Thompson was elected to the presidency of the New England Surgical Society at the last meeting in Burlington, Vermont. He was a fellow of the American College of Surgeons, the American Academy of Medicine, the American Genealogical Society, the American Medical Association, the Maine Medical Association, the Cumberland County Medical Society, and several medical clubs.

He was a man of many interests and was influential in civic, as well as professional affairs.

He is survived by his widow and two daughters.

RECENT DEATHS.

DR. GEORGE MANLEY ATWOOD of Bradford dropped dead, a victim of heart disease, while making a professional call, December 23, 1922, at the age of 66.

Dr. Atwood was born at Portland, Me., December 26, 1855. He was educated at the Medical School of Bowdoin College in the Class of 1884, settled in practice in Madison, N. H., moved to Ossipee, in that State, in 1888, and from there to Haverhill in 1891.

The following year he joined the State Medical Society. At one time he was a member of the staff of the Gale Hospital. His widow survives him.

CHARLES ANDREW POWERS, 64, widely known surgeon, president of the American Society for Control of Cancer, dropped dead in the University Club at Denver, Col., last week.

As president of the society, Dr. Powers was in charge of the "cancer week" campaign recently, and his work had been commended by President Harding.

DR. GEORGE HARDY FINCH, a Fellow of the Massachusetts Medical Society, died at his home in Springfield, December 18, 1922, at the age of 54.

Dr. Finch was born in Peoria, Ill., in 1868, was a graduate of the University of Vermont College of Medicine in 1898, and two years later settled in Springfield, engaging in general practice. About 12 years ago he studied genito-urinary surgery in Vienna, Austria, and for the past 10 years had made a specialty of that department of medicine. He was a member of the Hampden District Medical Society, of the Springfield Lodge of Masons, of the Knights Templar and Melba Temple of Shriners. He is survived by his widow, who was Miss Mable Dewey of New York City, and by one daughter.

BOSTON ORTHOPAEDIC CLUB.—Regular Monthly Meeting will be held January 15th, at 8 P.M. at the Harvard Club. Paper: Fractures in the Region of the Shoulder. Dr. James W. Sever. Discussion: Dr. F. J. Cotton. Paper: Case of Osteomyelitis of Spine, with Lantern Slides of X-rays. Dr. Mark H. Rogers.
Philip D. Wilson, *Secretary.*

Correspondence.

LONDON LETTER.

(From our own Correspondent.)

LONDON, December 1, 1922.

Treatment of Diabetes and "Insulin."—Naturally there has been a great deal of discussion, in both medical and lay journals, with regard to the preparation for the treatment of diabetes discovered in the laboratories of Toronto University. While the medical journals are restrained in their statements as to "Insulin," many of the lay journals state, without reserve, that a certain cure for diabetes has been discovered. At the 260th anniversary meeting of the British Royal Society, on November 30 last, the newly elected president, Sir Charles Sherrington, devoted a large part of his presidential address to a consideration of "Insulin." He said that the new pancreatic extract possessed striking power over the carbohydrate metabolism of the body. Potent as it was, experience with it was still limited, and the first program was further investigation of the extract's full properties, with caution as to raising hopes which practice might but partly fulfill. He pointed out that in this country the Medical Research Council had undertaken public-spirited direction of the extract's preparation and of further determination of its properties. The speaker briefly outlined the physiological steps of the discovery and emphasized the value of team work, drawing attention to the fact that since Dr. Banting and Mr. Best, the original workers, had engaged, as collaborators, Drs. Collip, Hepburn, Latchford, Macleod and Noble, advance of the work had proceeded relatively quickly, and successful extracts were now obtained from ordinary ox, sheep and swine pancreas.

Sir Charles Sherrington ended his discussion of the subject by pointing out that of much physiological interest was the fact that the active principle in the extract seemed one normally controlling the blood-sugar in health. Its injection rapidly lessened the blood-sugar in normal animals. The extract, added to a simple perfusion fluid containing a little glucose and streamed through the isolated rabbit heart, increased fourfold the heart's uptake of sugar from the fluid. The extract sometimes evoked serious nervous disturbances seemingly associated with extreme fall in the amount of the blood-sugar. Administered to diabetic depancreated animals, the extract brought reappearance of the liver's glycogen store, while bringing down the sugar excess in the blood and the excretion of sugar and acetone in the urine, and it enabled the diabetic organism to consume sugar. It also lessened or prevented hyperglycemia produced in animals in several other ways. Stress was laid upon the point that while gratifying success had already attended the use of this extract in the relief of diabetic patients, much further research was, however, yet needed for development of the methods of extraction and of the routine use of the active principle.

It appears that Dr. R. L. Mackenzie Wallis, chemical pathologist, St. Bartholomew's Hospital, London, has been working on the same lines as the Toronto investigators for a considerable time. Some of the results of his investigations were published in the *Lancet*, December 1 last. It seems that Dr. Wallis has succeeded in preparing a stable product which is thus capable of being given by the mouth, an object not yet attained in Toronto. Dr. Wallis states that a preparation of the pancreas obtained by alcoholic extraction *in vacuo* has been made; that this extract, when given by the mouth, is capable of reducing the blood-sugar in certain cases of diabetes mellitus; that by reducing the blood-sugar it is possible to increase the patient's tolerance to carbohydrates; therefore that the pancreatic extract is useful as an adjuvant, particularly in cases of diabetes mellitus with complications, gangrene, threatened coma and so on; and lastly, that the duration of treatment as well as the actual dosage is determined by the general condition of the patient, the blood-sugar and actual tolerance to carbohydrates.

The general opinion of members of the medical profession here, and especially of those who have made a study of the endocrine glands and gland therapy, is that much further investigation is required and prolonged treatment of diabetes is needed before any definite conclusions can be formed with regard to the value of "Insulin," or, indeed, of any glandular extracts, in the treatment of diabetes.

All that can be said at present is that the effects of "Insulin," and also, it seems, of Wallis' preparation, are encouraging and lead to the hope that a cure may be discovered for diabetes, but it would be distinctly premature to hail "Insulin" as such a cure.

Treatment of Cancer.—In the report of the Middlesex Hospital, issued recently, reference was made to a visit paid by Professor Sydney Russ to America to carry out a method of treatment of cancer developed in recent years in the hospital laboratories and based on the principle of immunity. It was stated that this method was now being put to a rigid test on the human subject, and that careful scrutiny of the results would be made. Hitherto experiments had been made on various animals, but not on human beings. It had been found that the removal of a cancerous growth, followed by x-ray treatment of that growth, produced a substance the deposit of which in an animal's body insures immunity from that particular form of cancer.

At King's College Hospital Research Laboratories, Dr. T. Shaw Mackenzie has worked for many years on the cancer problem. He claims to be able to

diagnose cancer by means of serum reactions, and hopes that his investigations will soon show definite results. In the laboratories of Liverpool University Dr. W. Blair Bell, professor of gynecology and obstetrics in that university, has been pursuing investigations upon the influence of saturnine compounds on cell-growth, with special reference to the treatment of malignant neoplasms. Lead in colloid form was used by means of intravenous injections, and it is stated that lead in suitable doses appeared in nearly all cases to arrest the growth of malignant tumors. Of course, in this instance nothing definite can be said, for the reason that proof of successful treatment cannot be given for a considerable time. Also the investigations are by no means complete. However, the results so far are gratifying. The Erlangen treatment of cancer is being employed, to some extent, in this country, and, it is claimed, with success. This treatment is more or less on its trial here.

Death of a Great Botanist.—Sir Isaac Bayley Balfour, one of the greatest of British botanists and who had held the chair of botany in Edinburgh University for 34 years, passed away on November 30, aged 69 years. His father was professor of botany in the same university for 34 years. In 1879, when only 26, he was appointed Regius professor of botany in the University of Glasgow. Four years later he was elected Sheradian professor of botany in Oxford University, and in 1888 succeeded to the chair of botany at Edinburgh. He and his father may be said to have made the Edinburgh Botanical Gardens, which were among the best of the world. He resigned from his professorship at Edinburgh at the end of last March.

Sir Norman Moore, a distinguished physician who rendered remarkable service to St. Bartholomew's Hospital, London, but who was better known as a biographer, especially of medical men, has just died. He was born in 1847 and educated at Owen's College, Manchester, and Cambridge University. His literary activities were incessant, perhaps the work to which he devoted most of his time and care, because it was a labor of love, was a history of St. Bartholomew's Hospital in two quarto volumes, illustrated with autotype copies of many original deeds. This work occupied his leisure time for over 30 years. He was president of the Royal College of Physicians and was one of the very few members of that church who have been presidents of the college since the Reformation.

A TRAINED NURSE.

510 Commonwealth Avenue,
Boston, Dec. 26, 1922.

Mr. Editor:

Dr. Frothingham had a very interesting article in the BOSTON MEDICAL AND SURGICAL JOURNAL of December 21, 1922, on the education of a trained nurse. He discusses the "training of young women so they could assist in the *care of sick people* under the direct supervision of physicians." To quote again, "There might be a fundamental two-year course in *nursing*, at the completion of which some *sort of a title* is given to the individual." (The italics are mine.)

With due humility may I suggest a title. May we not call her a "*trained nurse*." We did so call her once. Let the name stand, and devise a *new* title for the highly specialized individuals of our present-day training schools. I feel quite confident that physicians and laity will be glad to welcome the reincarnation of the "trained nurse."

Very sincerely yours,
ORVILLE R. CHADWELL, M.D.

FROM OUR FOREIGN CORRESPONDENT.

Geneva, Dec. 5, 1922.

Mr. Editor:

I have recently been given some figures showing the terrible financial straits of the Berlin panel doctors. Out of roughly three thousand practising physicians in Berlin there were, in the second quarter of this year, 1,368 whose income totalled under 10,000 marks for the three months. As the mark was at that time about 1,550 to the pound sterling, this is equivalent to an income of little more than two pounds a month—nominally about $9.00; 254 of them had incomes of three hundred marks, say 95 cents a month. Only 170 earned as much as ten thousand marks a month.

During the quarter referred to, 200 physicians did not get a single patient from the societies to which they were attached, and were obliged to entirely depend on private patients for their means of livelihood. Now, private patients are becoming fewer and fewer, so that the inference to be drawn is, first, that fewer people can afford to pay for medical treatment; and secondly, that there are far too many doctors Yet Berlin has only twelve doctors to every 10,000 inhabitants.

The outcome of these conditions is that numbers of physicians are giving up the profession and are trying to earn their living in other ways. One sold hot sausages outside the Anhalt Railway Station until his colleagues recognized him and compelled him to desist. Others took service in the evenings as restaurant waiters. One worked as a day laborer until his fellow workmen objected on the ground that he had no need to work with his hands, and was taking another man's wages. The outlook for the profession in these circumstances is unquestionably most serious.

A recent enactment of the Minister of Finance has transformed the Medical School of Marseilles into a Faculty of Medicine. The decree was signed by the President of the Republic after having been given the visa of the Minister of Public Instruction. The transformation of the school into a Faculty has been a matter of much discussion for several years. In 1920, Mr. Honnorat, senator of the Basses-Alpes, asked Prof. Roger, of the Academy of Medicine of Paris, to examine the question. The Superior Council of Public Instruction quickly sanctioned the favorable report presented by Prof. Roger. But this did not settle the question, as the financial discussions were laborious, and the government hesitated considerably.

Finally, the city of Marseilles became as usual generous, and after several votes the Municipal Council relieved the fears of the public powers by assuming, on the account of the city, the expenses incident to the necessary changes in the buildings, etc., as well as their up-keeping. And now Marseilles has its own Faculty of Medicine, so necessary for its importance in the South East region of France, and its rank as a colonial metropolis.

Henceforth medical students of Marseilles will no longer be compelled to finish their studies at Montpellier, Bordeaux, Lyons or Paris, in order to obtain the degree of M.D., which the University of Aix-Marseilles could deliver had a Faculty of Medicine previously existed.

Any competition of the young Faculty with that of Montpellier or other large centers is quite out of the question, and the glory and world-wide reputation of the University of Montpellier will in no way be diminished.

An open door to the Orient and French possessions as is Marseilles needed a School of Medicine recognized by the State, in which the professors of medicine could teach not only usual therapeutics and treatment, but above all therapeutics of colonial diseases, many cases of which are constantly in the wards of the hospitals of the ancient Phocian city.

The Revilliod-Julliard Lecture was delivered on November 23; before the Medical Society of Geneva, by Prof. Chauffard, of Paris, his subject being: "The Physiopathology of Hepatic Insufficiencies." During the past thirty years medical semeiology has been undergoing great changes. To physical signs and pathological anatomy which only grasp the external aspects of morbid phenomena, pathological physiology has been added, which implies the study of functional disturbances resulting from disease and detects the morbid process from its onset before constituted lesions are manifest.

The liver, "the great chemist of the body," possesses multiple functions; it is both an endocrine gland and one with external secretions. To appreciate the functional value of the liver, the alimentary glycosuria test is the oldest and most typical. It consists of the ingestion of sugar and its elimination in the urine. The amount of sugar is calculated in such a way that a normal liver retains the entire amount ingested. The methylene blue test and amino-aciduria after ingestion of peptones are also typical tests.

The latter test brings up the important question of the part played by the liver in nitrogen metabolism. One can ascertain the functional state of the liver in this respect by estimating the proportion of nitrogen transformed into urea in the urine or blood. The greater the percentage the better is the work of the liver carried out. The antitoxic function of the liver appears to be partially related to the quantity of glycogen contained in the gland, a notion which has led to the necessity of introducing sugar into the body before submitting a patient to general narcosis.

The study of the chromogenic function of the liver led Prof. Chauffard to the subject of the transformation of blood pigments and urobilin, the latter being called "the pigment of diseased livers" by Hayem. As to the uricolytic function its study, by means of modern chemical procedures, shows that functional disturbances of the liver certainly play a leading part in the pathogenesis of gout, a fact which the English school has maintained for a long time.

Biliary calculi, above all composed of cholesterin, are formed when the liver becomes incapable of transforming this substance into cholalic acid.

Regardless of the extreme complexity of these phenomena it is now evident that the fundamental function of the liver is above all a pexic one, especially in respect to proteins, the more simple nitrogenous compounds, sugar, fats and extraneous poisons.

Clinically, one may be dealing with dissociated insufficiencies or, on the contrary, with combined insufficiencies, some of which are now fairly well understood. For example, in alcoholic cirrhosis there is at the same time an increase of the sugar in the blood, an alimentary glycosuria and the passage of urobilin and bile salts into the urine. In lithiasis there is an excess of cholesterin and bilirubin in the blood-serum. In gout there is besides an excess of uric acid. Quite recently, one has found in subjects with diseased livers that the defensive reactions against tuberculin do not ensue and this energy denotes a lessened resistence and hence appears to explain the extreme frequency of tuberculous complications in patients with hepatic insufficiency, especially alcoholics.

The recent inauguration of an elaborate system of cancer treatment at the Tenon Hospital in Paris, under the direction of Dr. Proust, and of a similar installation at the Hôtel Dieu under Prof. Hartmann, has now given Paris a definite service from which much is hoped. In Paris alone there are over 350 deaths per month from malignant neoplasms, and it is unquestionabe that cancer is slowly on the increase. I learn from a reliable source that it is intended to establish similar systems shortly at Bordeaux, Lille, Montpellier, Lyons and Marseilles.

The new movement is largely due to the joint activities of the Franco-Anglo-American Association against cancer. The organization in the two abovementioned hospitals involves the use of both Roentgen rays and radium emanations.

At the Gynecological Clinic of the University of Geneva, Prof. Beuttner has had some really most encouraging results in some 200 cases of uterine cancer treated with radium, some of the patients having now been apparently cured for over five years. Similar results have been obtained in other Swiss clinics.

Last week a report was made to the Court of Liverpool University about a method of treating cancer which is at present being tried out. The method consists in intravenous injections of colloidal lead. It has been found that lead effects a chemical combination with lecithin, which is found in great profusion in the cancer cell. The combination apparently stops the growth of the cell, hence the growth of the neoplasm as well, and it is stated that by this treatment some growths have retrogressed and have disappeared. The main interest in this new treatment is that any cancer cell existing in the body is likely to be affected by the lead, but as yet the work is merely in the experimental stage.

Very truly yours,

CHARLES GREENE CUMSTON.

DISEASES REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

Week Ending December 9, 1922.

Disease.	*No. of Cases.*	*Disease.*	*No. of Cases.*
Anterior poliomyelitis	3	Pneumonia, lobar	118
Chicken-pox	216	Scarlet fever	203
Diphtheria	300	Septic sore throat	9
Dog-bite requiring anti-rabic treatment	3	Syphilis	31
German measles	17	Suppurative conjunctivitis	7
Gonorrhea	97	Tuberculosis, pulmonary	93
Influenza	10	Tuberculosis, other forms	17
Measles	531	Typhoid fever	8
Mumps	128	Whooping-cough	286
Ophthalmia neonatorum	21		

DISEASES REPORTED TO MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH.

WEEK ENDING DECEMBER 16, 1922.

Disease	*No. of Cases*	*Disease*	*No. of Cases*
Actinomycosis	1	Pneumonia, lobar	148
Chicken-pox	225	Scarlet fever	242
Diphtheria	266	Septic sore throat	1
Dog-bite	1	Suppurative conjunctivitis	5
Encephalitis lethargica	1	Syphilis	44
Epidemic cerebrospinal meningitis	3	Tetanus	2
German measles	5	Trachoma	3
Gonorrhea	85	Trichinosis	2
Influenza	20	Tuberculosis, pulmonary	134
Measles	528	Tuberculosis, other forms	14
Mumps	120	Typhoid	8
Ophthalmia neonatorum	16	Whooping cough	294

CORRECTION

In place of the word "vision," thirty-seventh line, first column, page 934, of the Dec. 21, 1922, issue of this Journal, the word virus should have appeared.

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ALOHA TO HAWAIIAN RATS.

THE Hawaiian Sugar Planters' Association experiment station reports that field rats in these islands destroy sugar yearly valued at over $100,000. Worse than this is the ever-present danger of bubonic plague from infected rats.

A new and successful method for wholesale killing of rats has just been discovered, reports *Science*. Poison rat cakes are being manufactured by the millions at Honokaa plantation and are being spread through more than ten thousand acres of cane fields and waste land.

The poison used is barium carbonate, deadly to rats and field mice, but only slightly poisonous to human beings, live stock and poultry. It is mixed with flour dough and made into small cakes, paraffin coated to protect them from dampness, thus insuring their effectiveness for many months.

SALVAGERS OF SOCIETY.

No less an authority on preventive medicine than Dr. Milton J. Rosenau of the Harvard Medical School has said that "salvaging mental derelicts is one of the most promising fields for harvesting the fruits of hygiene." Of all the elements and factors that enter into the process of preventing mental illness or in restoring to health sufferers from this condition, psychiatric social work is one of the most indispensable.—*Bulletin Mass. Society for Mental Hygiene.*

The prevention of sickness by sanitary practices and wholesome foods, the economical use of time and materials within the home, the making of articles of use and of beauty—these are the lines of instruction in home economics.

SOCIETY MEETINGS.

DISTRICT SOCIETIES.

A list of society meetings is herewith published. This list will be changed on information furnished by the secretaries of the societies, and will appear in each issue.

Barnstable District:—Hyannis,—February 2, 1923, (Annual Meeting)—May 4, 1923.

Bristol South District:—Fall River,—May 3, 1923.

Essex North District:—Lawrence, Y. M. C. A. Building (Annual Meeting), May 2, 1923.

Meetings of the Suffolk District and the Boston Medical Library, at the Library:

January 31, 1923:—Medical Meeting. "Epidemic Encephalitis," Dr. E. W. Taylor, Boston.

February 28, 1923:—Medical Meeting. "Colitis," Dr. Henry F. Hewes, Boston.

March 28, 1923:—Surgical Meeting. "A Review of What Surgery Can Accomplish in Diseases of the Thoracic Organs, with a Forecast of the Future," Dr. Howard Lilienthal of New York.

April 25, 1923:—Annual Meeting. Election of Officers. "The Record of the Past Twelve Years in Syphilology, with a Forecast of the Future." A series of 10-minute papers. Dr. C. Morton Smith, Boston, will preside.

The Springfield Academy of Medicine meets the second Tuesday of each month. Schedule of speakers includes the following names: Dr. Alexis Carrel, Dr. W. B. Long, Dr. J. W. Williams, Dr. W. S. Thayer, and Dr. Barton Cooke, Hist. The date for each speaker has not been assigned.

Middlesex North District:—Meeting, Wednesday, January 31, 1923.

Middlesex East District—Jan. 24, 1923. The Nursing Problem. Speaker to be announced later.

March 21, 1923. Mental Factors in Childhood. Paper by Dr. William Healy.

April 18, 1923. Interpretation of Laboratory Findings. Papers by Dr. E. G. Crabtree and one to be announced later.

May 9, 1923. Annual Meeting.

All meetings except the annual meeting will be held at the Harvard Club in Boston. A. E. Small, Secretary.

Worcester District Meetings are scheduled as follows:

January 10, 1923:—The meeting will be held at the Worcester State Hospital, Belmont Street, at 4.15 P.M. Programme: "A Discussion of Status Thymico-Lymphaticus and the Inherent Compensatory Possibilities," Dr. Walter Timme, New York City. Discussion will be opened by Dr. W. A. Bryan.

February 14, 1923:—The meeting will be held at the Worcester City Hospital at 4.15 P.M. The programme will consist of a series of papers by members of the staff.

March 14, 1923:—The meeting will be held at St. Vincent's Hospital at 8.15 P.M. The programme will consist of a series of papers by members of the staff.

April 11, 1923:—The meeting will be held at Memorial Hospital at 8.15 P.M., and the programme will consist of a series of papers by members of the staff.

May 9, 1923:—Annual meeting and banquet.

STATE, INTERSTATE AND NATIONAL SOCIETIES.

NEW ENGLAND PEDIATRIC SOCIETY:—The following are the dates for meetings the coming season. Each meeting is on the second Friday of the month at the Boston Medical Library: January 12, February 9, March 9, April 13 and May 11.

January, 1923:—Massachusetts Society of Examining Physicians (date and place undecided); Hilbert F. Day, Secretary. Massachusetts Association of Boards of Health, January 25, Annual Meeting, Boston; W. H. Allen, Mansfield, Mass., Secretary.

January, 1923:—Boston Association of Cardiac Clinics. Meeting January 18, 1923, at 8:15 P.M. Boston Lying-In Hospital (New Hospital). Subject: Pregnancy and Heart Disease.

January, 1923:—Boston Medical History Club will meet January 15, 1923.

February, 1923:—New England Dermatological Society Meeting, February 14, 1923, at 3.30 P. M., in the Skin Out-Patient Department, Massachusetts General Hospital; C. Guy Lane, Secretary.

February, 1923:—Boston Medical History Club will meet the third Monday of this month.

March, 1923:—Massachusetts Society of Examining Physicians (date and place undecided); Hilbert F. Day, Secretary.

March, 1923:—Boston Association of Cardiac Clinics. Meeting March 15, 1923, at 8:15 P.M. Boston City Hospital. Subject: Prevention and Relief of Heart Failure.

March, 1923:—Boston Medical History Club will meet the third Monday of this month.

April, 1923:—New England Dermatological Society Meeting, April 11, 1923, at 3.30 P. M., in the Surgical Amphitheatre, Boston City Hospital; C. Guy Lane, Secretary. Massachusetts Association of Boards of Health, April 26, 1923, Boston; W. H. Allen, Mansfield, Mass., Secretary.

April, 1923:—Boston Medical History Club will meet the third Monday of this month.

May, 1923:—Massachusetts Society of Examining Physicians (date and place undecided). American Pediatric Society Meeting, May 31, June 1 and 2, 1923, at French Lick Springs Hotel, French Lick, Ind.; H. C. Carpenter, Secretary.

May, 1923:—Boston Association of Cardiac Clinics. Meeting May 17, 1923, at 8:15 P.M. Children's Hospital. Subject: Rheumatism and Chorea and Heart Disease.

June, 1923:—American Medical Association, San Francisco, June 25-29, 1923; Alexander R. Craig,* Chicago, Ill., Secretary.

July, 1923:—Massachusetts Association of Boards of Health, July 20, Nantasket; W. H. Allen, Mansfield, Mass., Secretary.

*Deceased September 2, 1922.